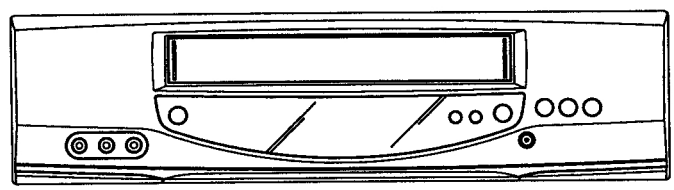
SERVICE MANUAL

ORION

VH-2911HIFISI / VH-2911HIFI

VIDEO CASSETTE RECORDER



VHS
PAL

ORIGINAL
CHASSIS CODE A

Best. Nr. SM2911

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

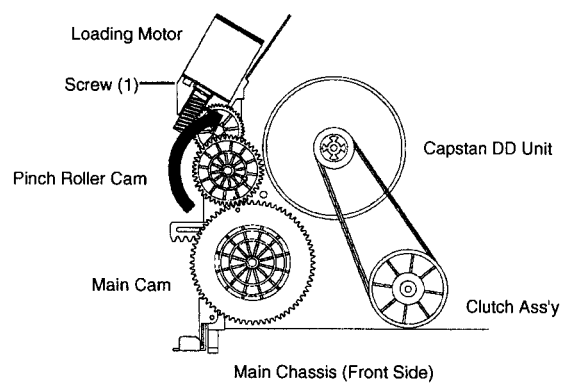
Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)
1. MODEL NUMBER and CHASSIS CODE
   You can find it inthe back of your unit.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet and Front Cabinet.
   (Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)
2. Remove the screw (1) of the Deck Chassis and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.
4. Rotate the Clutch Ass'y either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.



CONTENTS

SERVICING NOTICES ON CHECKING A1-1
HOW TO ORDER PARTS A1-1
TAPE REMOVAL METHOD AT NO POWER SUPPLY A1-1
CONTENTS A2-1
GENERAL SPECIFICATIONS ..... A3-1~A3-4
DISASSEMBLY INSTRUCTIONS
1. REMOVAL OF MECHANICAL PARTS AND P. C. BOARDS B1-1
2. REMOVAL OF VCR DECK PARTS ..... B2-1~B2-6
3. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC B3-1, B3-2
KEY TO ABBREVIATIONS C1-1, C1-2
SERVICE MODE LIST C2-1
PREVENTIVE CHECKS AND SERVICE INTERVALS C3-1, C3-2
WHEN REPLACING EEPROM (MEMORY) IC C4-1
SERVICING FIXTURES AND TOOLS D1-1
PREPARATION FOR SERVICING D1-1
MECHANICAL ADJUSTMENTS ..... D2-1~D2-4
ELECTRICAL ADJUSTMENTS ..... D3-1~D3-3
BLOCK DIAGRAMS
Y/C/AUDIO/HEAD AMP E-1, E-2
SYSTEM CONTROL/SERVO/TIMER E-3, E-4
HI-FI DEMODULATOR/21PIN/TUNER E-5, E-6
DISPLAY/POWER E-7, E-8
PRINTED CIRCUIT BOARDS
SYSCON/AUDIO ..... F-1~ F-4
SCHEMATIC DIAGRAMS
Y/C/AUDIO/HEAD AMP G-1, G-2
SYSTEM CONTROL/SERVO/TIMER G-3, G-4
POWER G-5, G-6
DISPLAY G-7, G-8
HI-FI DEMODULATOR G-9, G-10
21PIN/VPS/TUNER G-11, G-12
INTERCONNECTION DIAGRAM G-13, G-14
WAVEFORMS H-1
MECHANICAL EXPLODED VIEW I1-1
CHASSIS EXPLODED VIEWS I2-1, I2-2
MECHANICAL REPLACEMENT PARTS LIST J1-1
CHASSIS REPLACEMENT PARTS LIST J2-1
ELECTRICAL REPLACEMENT PARTS LIST J3-1, J3-2

GENERAL SPECIFICATIONS

G-1	VCR System	System				VHS Player / Recorder
		Video System				PAL
		Hi-Fi STEREO				Yes
		NTSC PB(PAL60Hz)				Yes
		Deck		DECK		OVD-7
				Loading System		Front
				Motor		3
		Heads	Video Head			4Head
			FM Audio Head			2Head
			Audio /Control			Mono/Yes
			Erase(Full Track Erase)			Yes
		Tape Speed	Rec	PAL		SP/LP
				NTSC		-
			Play	PAL		SP/LP
				NTSC		SP
		Fast Forward / Rewind Time (Approx.) at +25Co			with Cassette	FF:1'12"/REW:1'12" E-180
		Forward/Reverse Picture Search		NTSC or PAL-M		SP=3x,5x
				PAL or SECAM		SP/LP=5x,7x / 7x, 13x
		Frame Advance				Yes
		Slow Speed		Approx.		1/5, 1/10, 1/30
G-2	Tuning System	Broadcasting System				CCIR System BG
		Tuner and Receive CH		System		1Tuner
				Destination		Oscar (W/ HYPER)
				Tuning System		F-Synth
				Input Impedance		VHF/UHF 75 OHM
				CH Coverage		E2~E4, X~Z+2, S1~S10, E5~E12,S11~S41,E21~E69
		Intermediate Frequency		Picture(FP)		38.9MHz
				Sound(FS)		33.4MHz
				FP-FS		5.5MHz
		Auto Guide Ch Area				-
		Auto Tuning Method				C.C.I.R. CH Plan
		Preset CH				80CH
		RF Converter Output				Yes
			Channel			23~69 ch
			Level/Impedance			73 dBu / 75 Ohm
			Sound Selector			No
		Stereo/Dual TV Sound				G-ST
		Tuner Sound Muting				Yes
G-3	Power	Power Source		AC		230V, 50Hz
				DC		-
		Power Consumption		(at AC)		11 W at 230 V 50Hz
				Stand by (at AC)		3 W at 230 V 50Hz
				Per Year		-
		Protector		Power Fuse		Yes
				Dew Sensor		No
G-4	Regulation			Safety		CE
				Radiation		CE
G-5	Temperature			Operation		5°C - 40°C
				Storage		-20°C - 60°C
G-6	Operating Humidity					Less than 80% RH
G-7	Signal	Video Signal		Input Level		1 V p-p/75 ohm
				Output Level		1 V p-p/75 ohm
				S/N Ratio (Weighted)		53 dB
				Horizontal Resolution at SP Mode		240Line
		Audio Signal (0dB=0.775Vrms)		Input Level		-3.8dBm/50Kohm
				Output Level		-3.8dBm/1 Kohm
				S/N Ratio at SP (Weighted)		42 dB
				Harmonic Distortion at SP (1KHz) Typical		1.5%
				Frequency Response	at SP	100Hz ~10kHz
					at LP	100Hz ~5kHz
					at SLP	-
		Hi-Fi Audio Signal		Dynamic Range : More than		75 dB
				Frequency Response		20Hz ~20kHz
				Wow And Flutter : Less than		0.01 %Wrms
				Channel Separation : More than		60 dB
				Harmonic Distortion : Less than		1.0 %
G-8	On Screen Display	Menu				Yes
			Menu	Type		Character
			ATS			No
			Timer Rec Set			Yes
			Auto Repeat On/Off			Yes
			VCR Set-Up			No
				Color System		No

GENERAL SPECIFICATIONS

			NICAM Auto/Off	No	
			BBE On/Off	No	
		CH Set-Up		Yes	
			CH Tuning	Yes	
			Auto Tuning	Yes	
			CH Mapping	Yes	
			Guide CH Set	No	
		System Set-Up		Yes	
			Clock Set	Yes	(Calendar , 24H)
			Language	Yes	
			AV2 DEC/AV	Yes	
			RF Output G/K/I	No	
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry		No	
		NICAM 1/2,NICAM Off,Audio Output		No	
		Stereo,Audio Output,Bilingual		Yes	
		Play/Stop/FF/Rew/Rec/OTR (ITR) /T-Rec/Pause/Eject/Tape In (Symbol Mark)		Yes	
		Others	CH/AV (LINE)	Yes	
			Clock	Yes	
			Repeat	No	
			Tape Counter	Yes	
			Index	Yes	
			Tape Speed	Yes	
			Manual Tracking (Bar Setting)	Yes	
			Hi-Fi	Yes	
			Zero Return	Yes	
			VPS	No	
			PDC	No	
			TEST Signal	Yes	
G-9	OSD Language			Eng / Ger / Fre / Spa / Ita	
G-10	Clock,Timer and Timer Back-up	Calendar		1990/1/1 ~ 2081/12/31	
		Timer Events		8 prog/1 month	
		One Touch Recording Max Time		SP/LP:6 Hours	
		OTPB Valid Time		-	
		Timer Back-up (at Power Off Mode)		30	min.
G-11	Display	Indicator		Yes	
		Indicator Type		LED Module (Green + Red)	
			Clock/Counter,CH,Timer Rec, Play, REC	Yes	
			VCR	Yes	
			PM	No	
			Auto Tuning	Yes	
			RF Output CH	Yes	
G-12	Remote Control	Unit		RC- ED	
		Glow in Dark Remocon		No	
		Format type		NEC	
		Power Source	Voltage(D.C)	3V	
			UM size x pcs	UM-4 x 2 pcs	
		Total Keys		33	Keys
		Keys	Power	Yes	
			1	Yes	
			2	Yes	
			3	Yes	
			4	Yes	
			5	Yes	
			6	Yes	
			7	Yes	
			8	Yes	
			9	Yes	
			0 / AV	Yes	
			CH / Tracking Up	Yes	
			CH / Tracking Down	Yes	
			Play / Up	No	
			Play / Up / Slow	Yes	
			Stop/Down	Yes	
			F.Fwd / Right	Yes	
			Rew / Left	Yes	
			Pause	No	
			Pause/Still	Yes	
			Rec/OTR	Yes	
			Eject	Yes	
			Counter Reset	Yes	
			Speed	Yes	
			Timer Rec	Yes	
			Index	Yes	
			TV / VCR	Yes	
			Program	Yes	
			Program / Video Plus+	No	

GENERAL SPECIFICATIONS

			Menu	Yes	
			Enter	Yes	
			Cancel/CH Skip	Yes	
			Call	Yes	
			Zero Return	Yes	
			Clock/Counter	Yes	
			Audio Select	Yes	
			Auto Tracking		No
					No
G-13	Features	Auto Head Cleaning		Yes	
		Auto Tracking		Yes	
		Index Search		Yes	
		HQ (VHS Standard High Quality)		Yes	
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes	
		Auto Repeat		Yes	
		Auto Power Off		Yes	
		VIDEO PLUS+(SHOWVIEW,G-CODE)			No
		Auto Set Up (CH Auto Set-Up/Auto Clock)			No
		ATS			No
		PDC			No
		VPS			No
		BBE Audio			No
		Remote Control Code 1/2			No
		RGB Through			No
		SQPB (PAL SP Mode)			No
G-14	Accessories	Owner's Manual		Yes	
			Language	German	
			w/Guarantee Card	Yes	
		Remote Control Unit		Yes	
		Dew Caution Sheet			No
		Video Cassette Tape			No
		Battery		Yes	
			UM size x pcs	UM-4 x 2 pcs	
			OEM Brand		No
		Safety Tip			No
		Toll Free Insert Sheet			No
		Quick Set-Up Sheet		Yes	
		Information Sheet		Yes	
		75 Ohm Coaxial Cable (0.9m)		Yes	
			type	Double shield	
		U/V Mixer			No
		DC Car Cord (Center+)			No
		Guarantee Card			No
		Warning Sheet			No
		Circuit Diagram			No
		Antenna Change Plug			No
		Service Facility List			No
		Important Safeguard			No
		Dew/AHC Caution Sheet			No
		AC Plug Adapter			No
		AC Cord			No
		AV Cord (1.2m)			No
		Registration Card			No
		PTB Sheet			No
		300 ohm to 75 ohm Antenna Adapter			No
G-15	Interface	Switch	Power	Yes	
			Play	Yes	
			Channel Up	Yes	
			Channel Down	Yes	
			F.FWD/Cue	Yes	
			Rew/Rev	Yes	
			Eject/Stop	Yes	
			Rec/OTR	Yes	
			Main Power SW		No
		Indicator	Power		No
			Stand by		No
			TV/VCR		No
			T-REC		No
			Rec/OTR		No
		Terminals Front	Video Input	RCA x1 (YELLOW)	
			Audio Input	RCA x 2 (WHITE/RED)	
			Other Terminal		No
		Rear	Video Input		No
			Audio Input		No
			Video Output		No
			Audio Output	RCA x 2 (WHITE/RED)	
			Euro Scart	2-SCART	

GENERAL SPECIFICATIONS

			VHF/UHF Antenna Input/Output	DIN Type	
G-16	**Set Size**		Approx. W x D x H (mm)	360 x 226 x 95	
G-17	**Weight**		Net (Approx.)	3.2	Kg
			Gross (Approx.)	3.8	Kg
G-18	**Carton**	Master Carton			No
			Content	-	
			Material	-	
			Dimensions W x D x H(mm)	-	
			Description of Origin	-	
		Gift Box		Yes	
			Material	Single/Full Color	
			Dimensions W x D x H(mm)	429 x 292 x 168	
			Pulp Package	Yes	
			Design	As Per BUYER 's	
			Description of Origin		No
		Drop Test	Natural Dropping	Quelle Dropping At 2 Edges / 4 Surfaces	
			Height (cm)	80	
		Container Stuffing(40' container)		2992	Sets
G-19	**Material**	Cabinet	Front	PS 94HB	
		PCB	Non-Halogen Demand		No
			Eyelet Demand		No

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws (1).
2. Remove the Top Cabinet in the direction of arrow (A).
3. Unlock the 7 supports (2).
4. Remove the Front Cabinet in the direction of arrow (B).

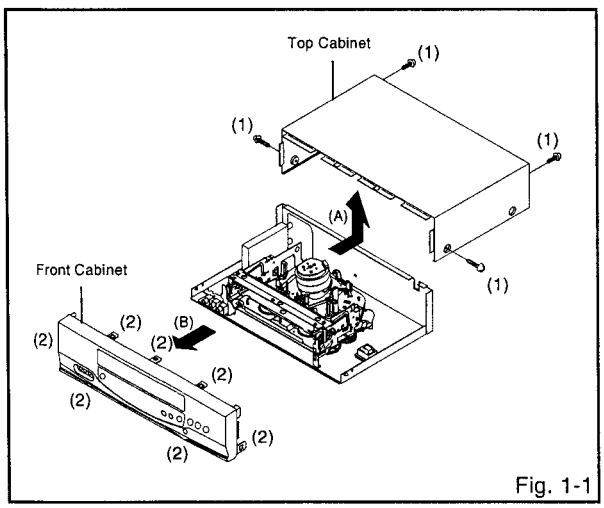


Fig. 1-1

1-2: FLAP (Refer to Fig. 1-2)

1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

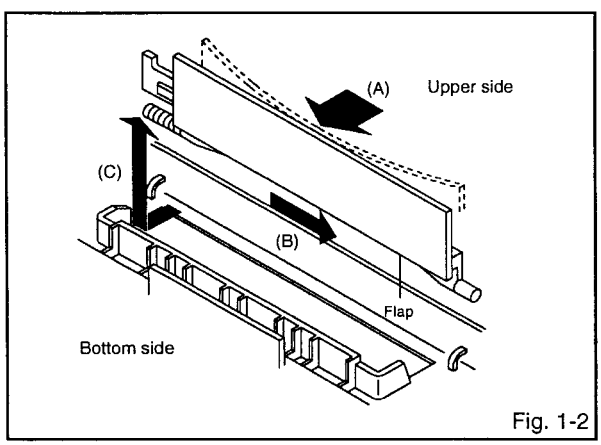


Fig. 1-2

1-3: DECK CHASSIS (Refer to Fig. 1-3)

NOTE

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Remove the screw (1).
2. Remove the FE Head.
3. Remove the 3 screws (2).
4. Disconnect the following connectors: (CP1001, CP4001, CP4002 and CP4003).
5. Remove the Deck Chassis in the direction of arrow.

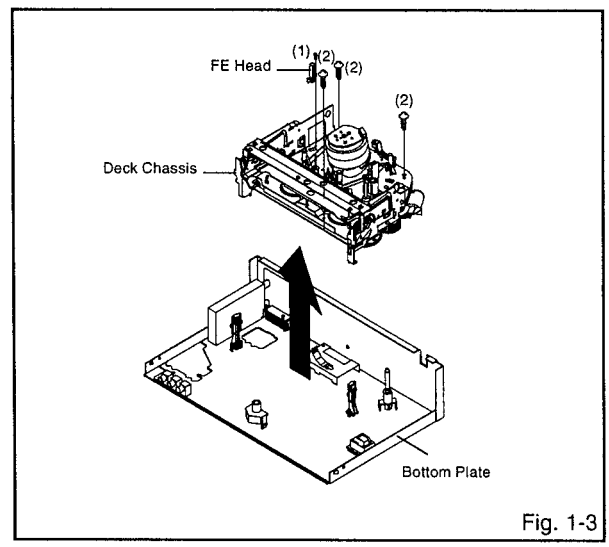


Fig. 1-3

1-4: SYSCON PCB AND AUDIO PCB (Refer to Fig. 1-4)

1. Remove the 2 screws (1).
2. Remove the screw (2).
3. Remove the Syscon PCB in the direction of arrow (A).
4. Remove the Audio PCB in the direction of arrow (B).

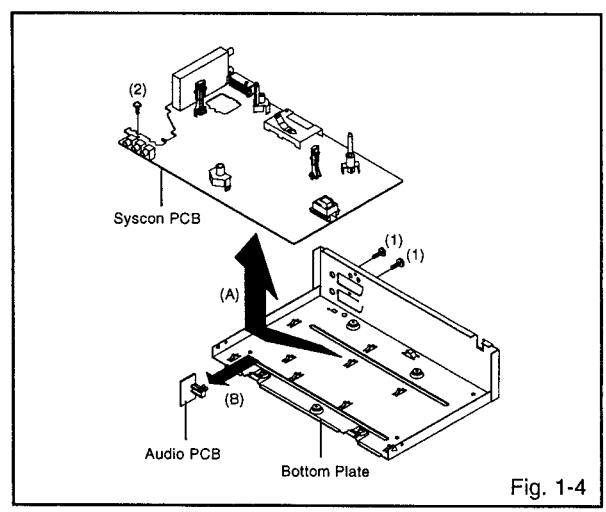


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports (1).
2. Slide the 2 supports (2) and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support (1) so that the Top Bracket is fixed.

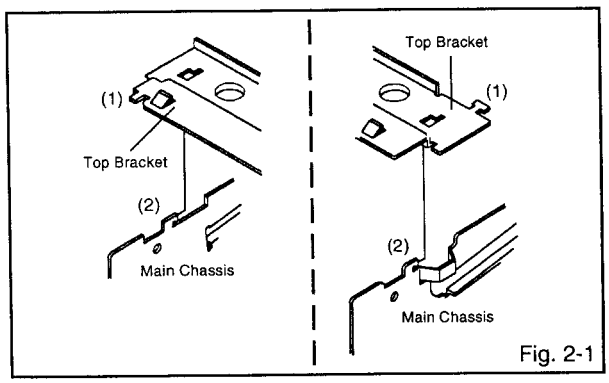


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

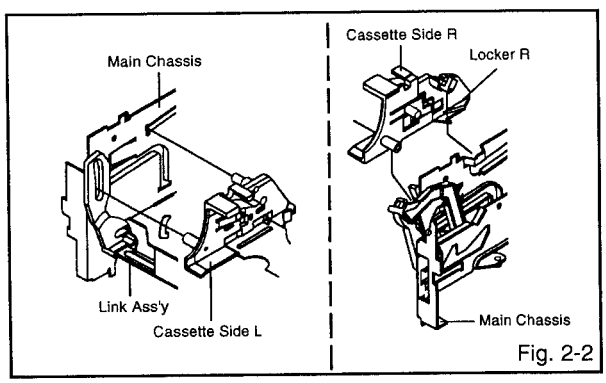


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports (1) and then remove the Cassette Side L/R.
3. Unlock the support (2) and then remove the Locker R.

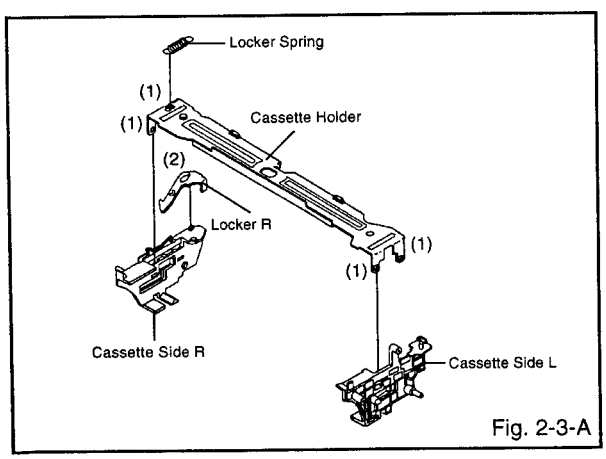


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the one position of Fig.2-3-B is correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

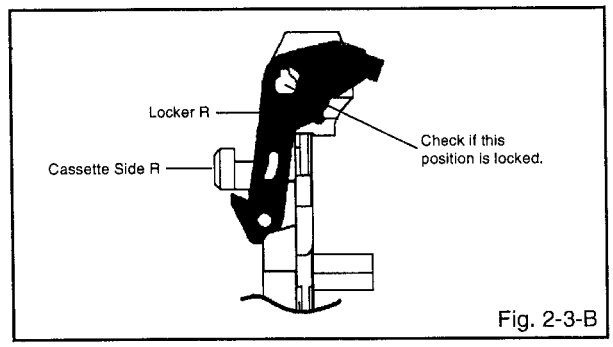


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support (1).
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

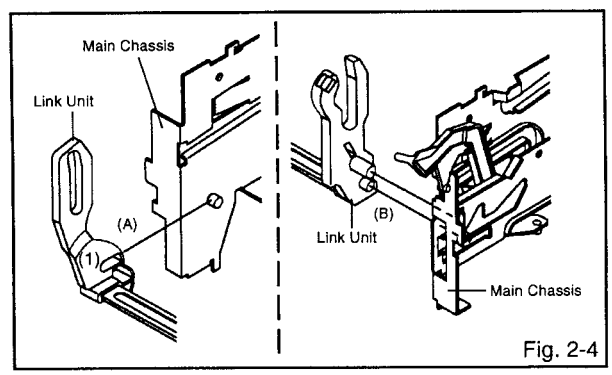


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER/BOT COVER (Refer to Fig. 2-5)

1. Unlock the support (1).
2. Remove the BOT Cover.
3. Extend the support (2).
4. Remove the Link Lever.
5. Remove the Flap Lever.

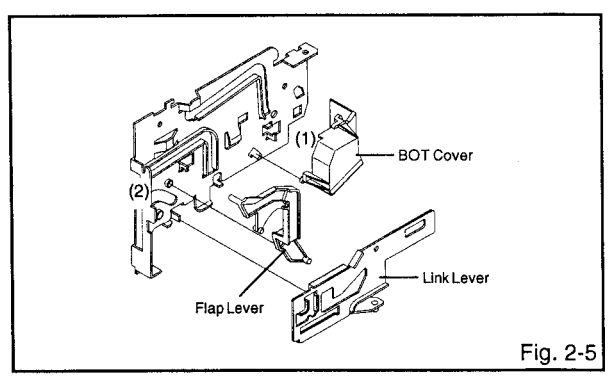


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw (1).
2. Remove the Loading Motor.
3. Remove the Worm.

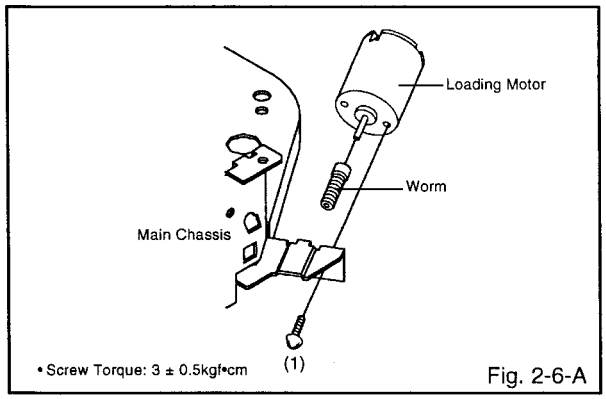


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

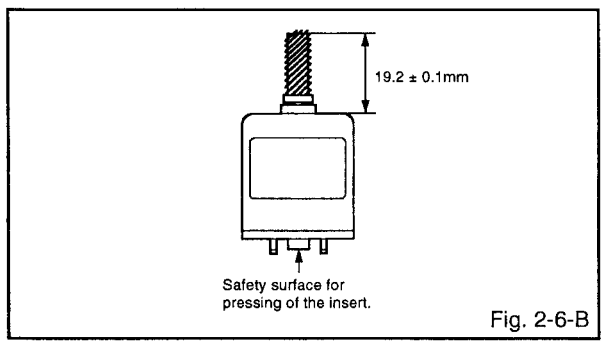


Fig. 2-6-B

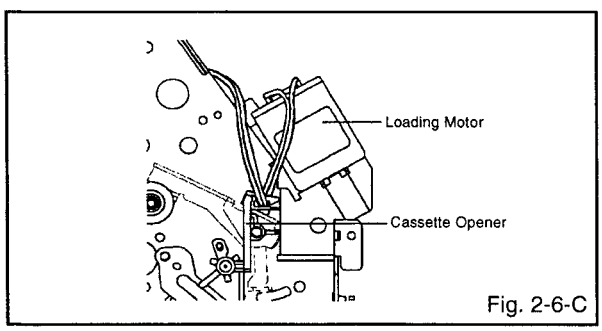


Fig. 2-6-C

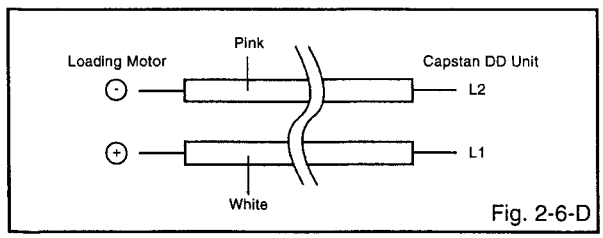


Fig. 2-6-D

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports (1) and remove the Tension Band.
4. Unlock the support (2) and remove the Tension Arm Ass'y.
5. Unlock the support (3) and remove the Tension Connect.
6. Float the hook (4) and turn it clockwise then remove the Tension Holder.

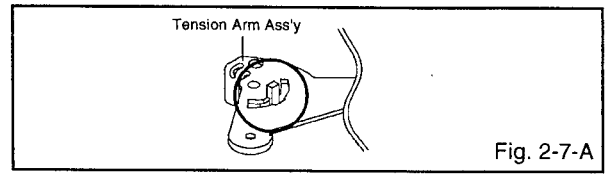


Fig. 2-7-A

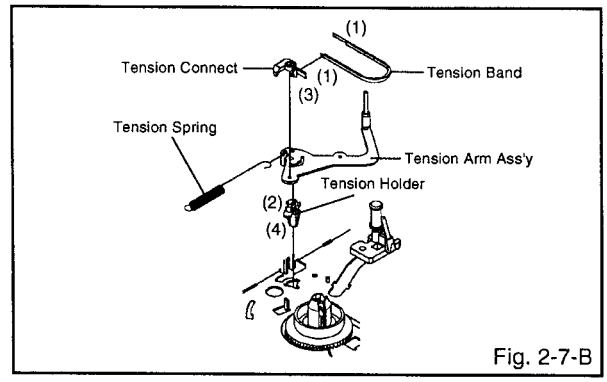


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

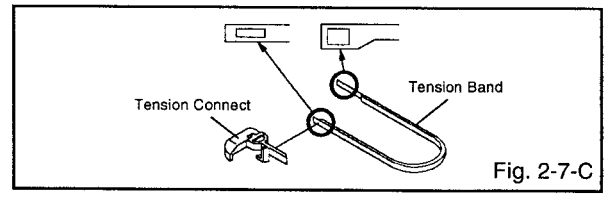


Fig. 2-7-C

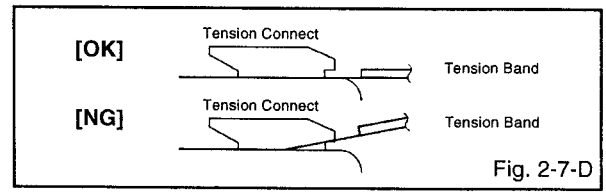


Fig. 2-7-D

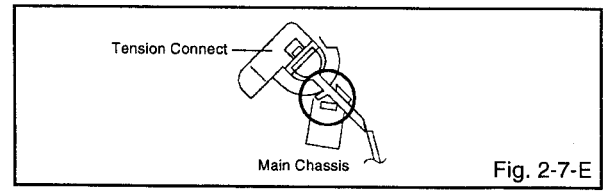


Fig. 2-7-E

DISASSEMBLY INSTRUCTIONS

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports (1) and remove the T Brake Band.

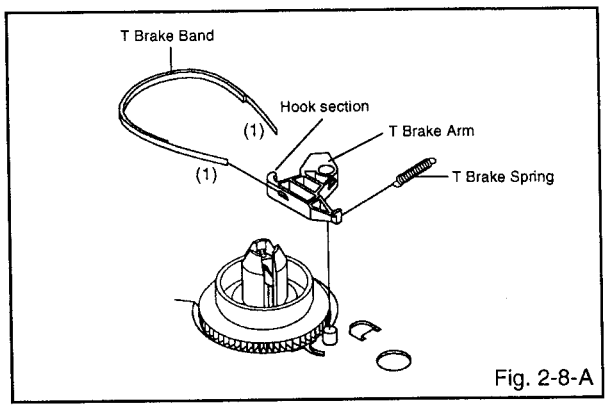


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

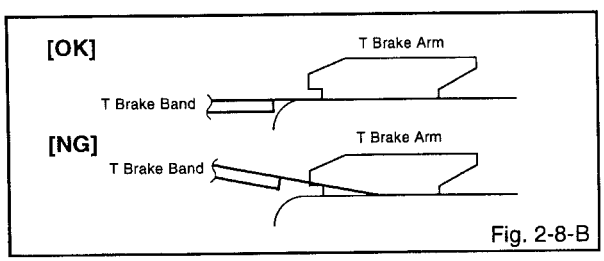


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers (1).
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it (FG-84M). (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

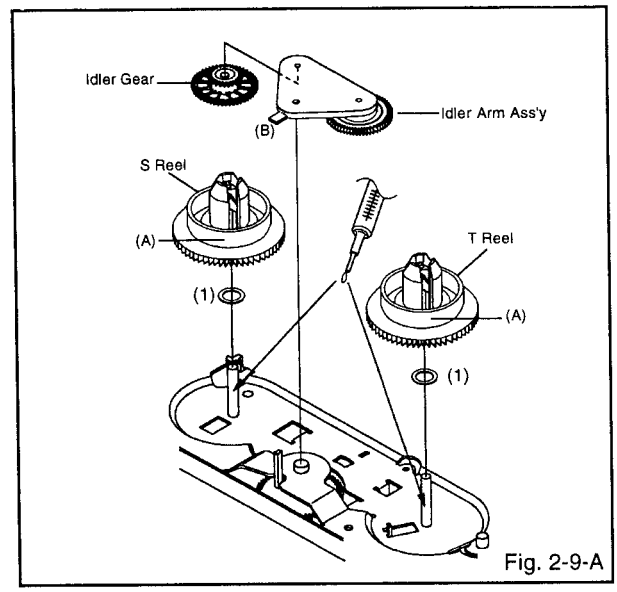


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C, And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

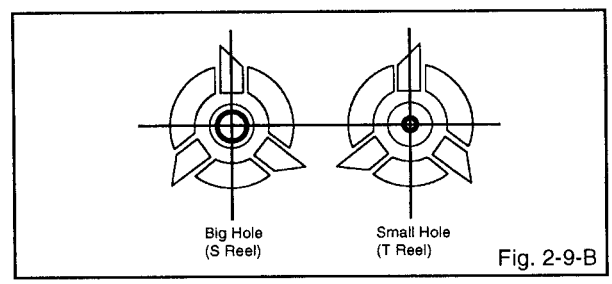


Fig. 2-9-B

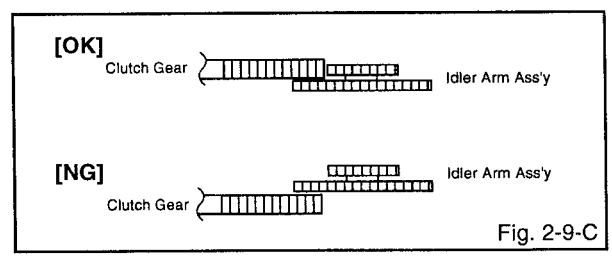


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/ P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support (1) and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

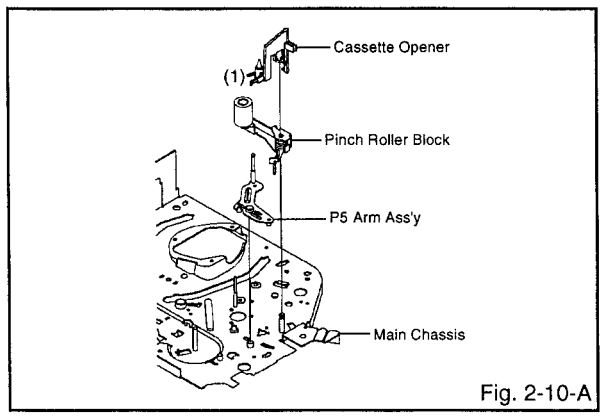


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

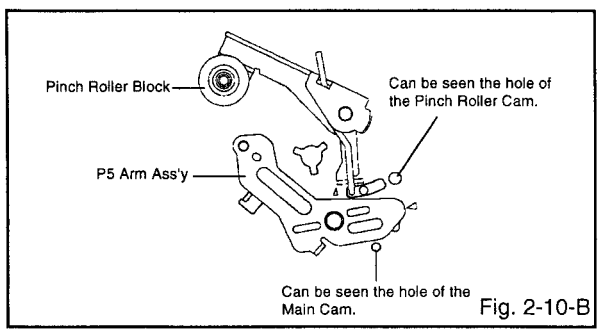


Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw (1).
2. Remove the A/C Head Base.
3. Remove the 3 screws (2).
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw **(1)** first, then tighten the screw **(2)**, finally tighten the screw **(3)**.

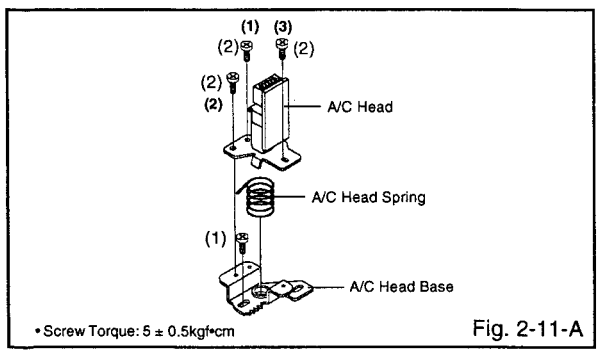


Fig. 2-11-A

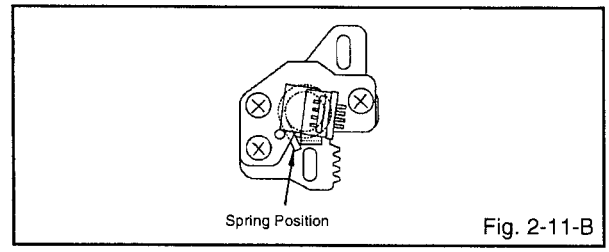


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw (1).
2. Remove the FE Head.

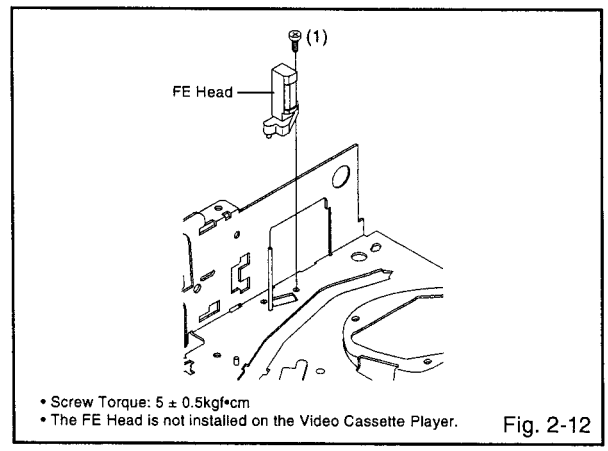


Fig. 2-12

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support (1) and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws (2).
4. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from **(1)** to **(3)** in order while pulling the Ass'y toward the left front direction.

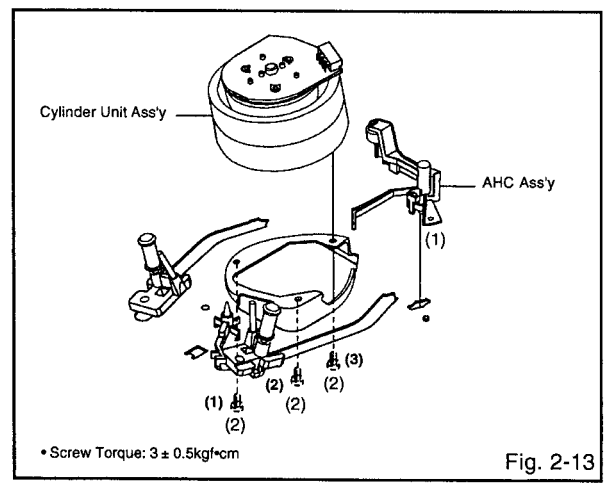


Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws (1).
3. Remove the Capstan DD Unit.

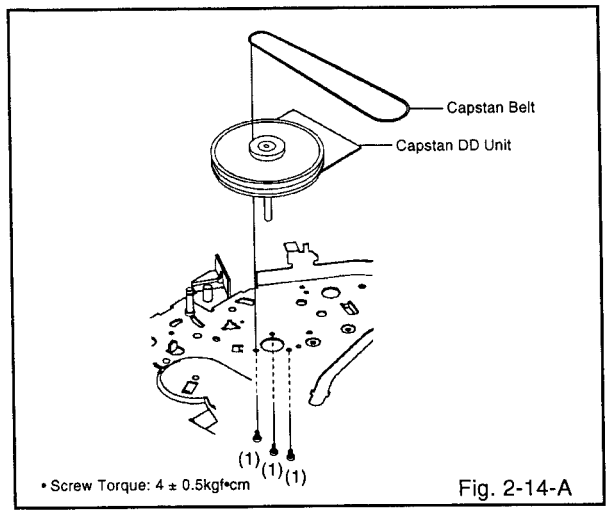


Fig. 2-14-A

NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal nosie will be heard on the deck operation.) **(Refer to Fig. 2-14-B, C)**

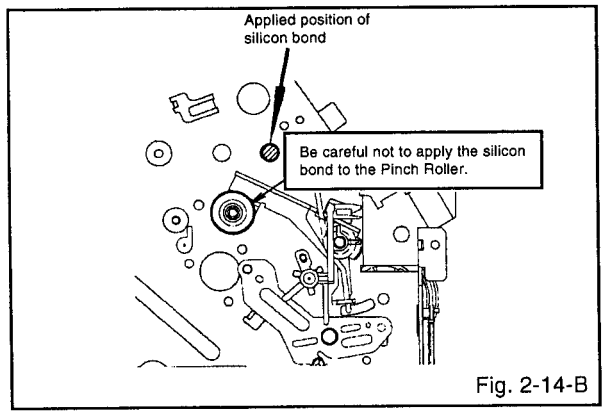


Fig. 2-14-B

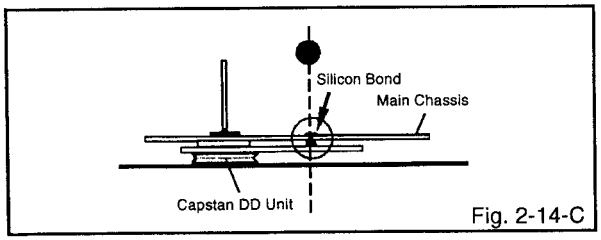


Fig. 2-14-C

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring (1), then remove the Main Cam.
2. Remove the E-Ring (2), then remove the Pinch Roller Cam and Joint Gear.

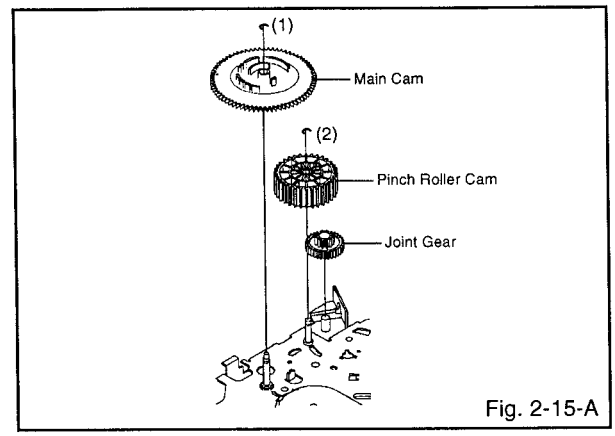


Fig. 2-15-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)**

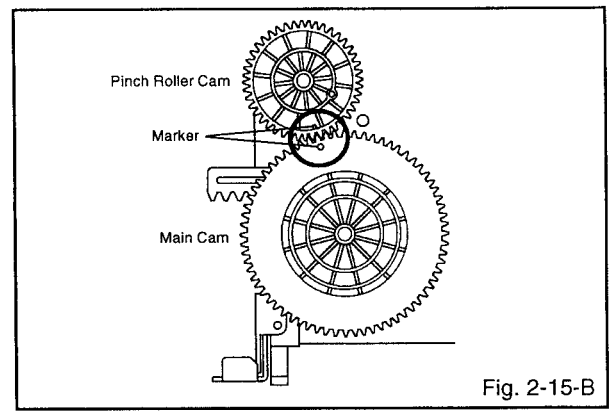


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring (1) and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

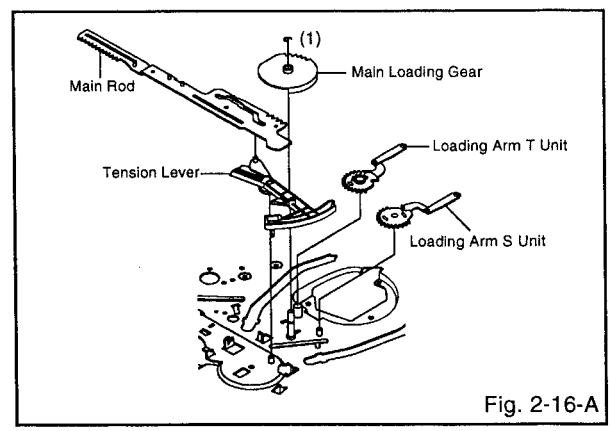


Fig. 2-16-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

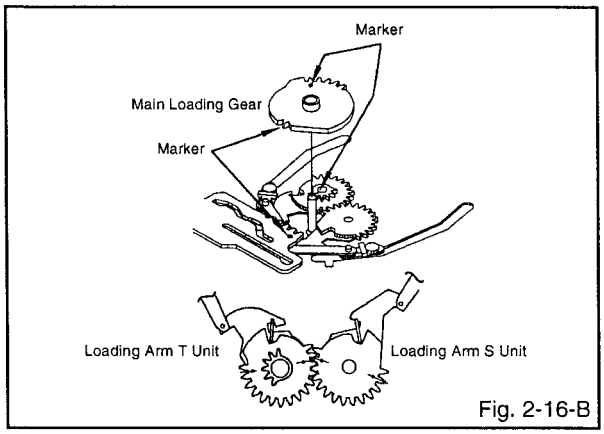


Fig. 2-16-B

2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer (1).
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

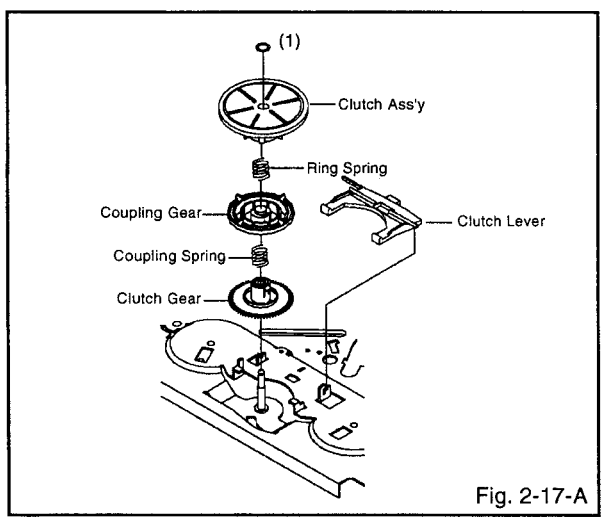


Fig. 2-17-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

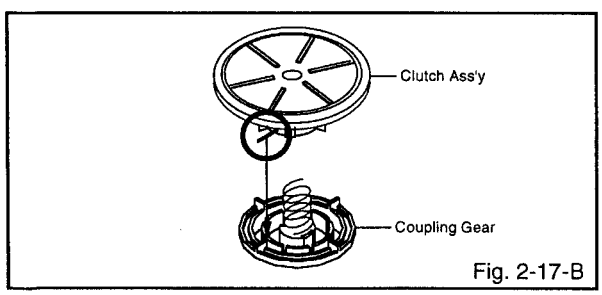


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP/LED REFLECTOR (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support (1) and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw (2)
5. Remove the LED Reflector.

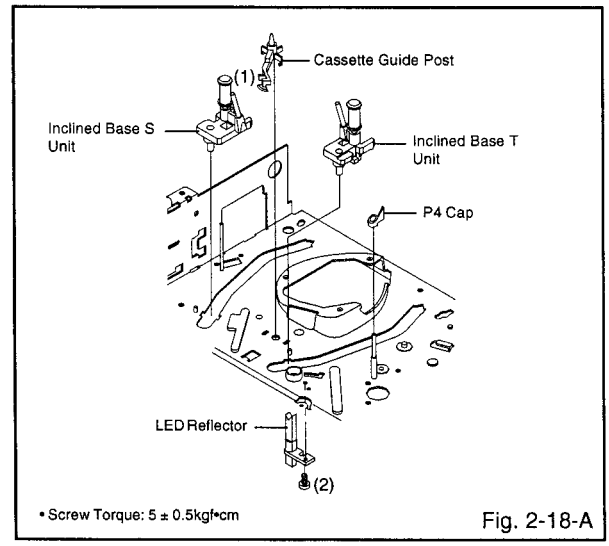


Fig. 2-18-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

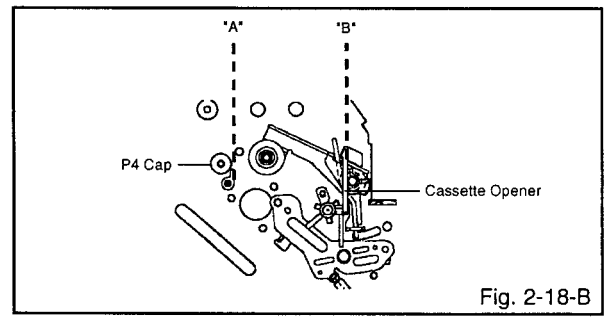


Fig. 2-18-B

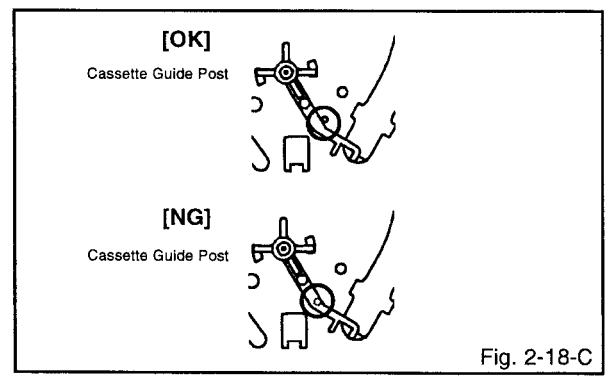


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 3-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

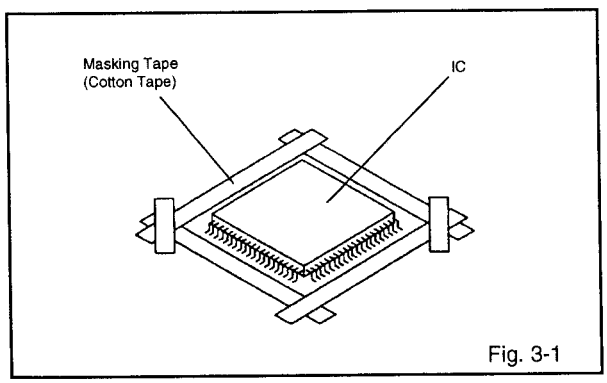


Fig. 3-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 3-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

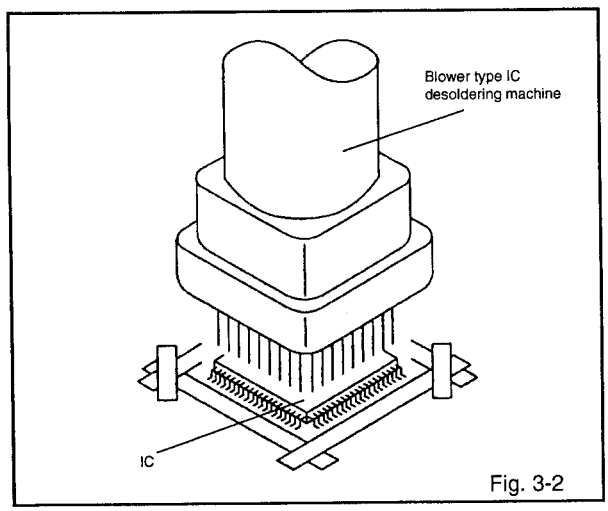


Fig. 3-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 3-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

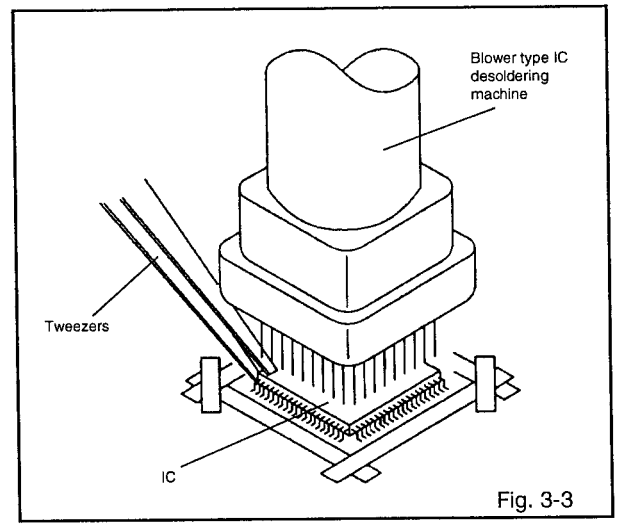


Fig. 3-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 3-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

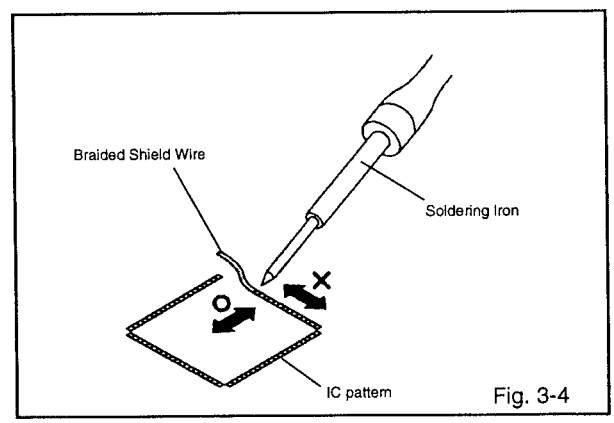


Fig. 3-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 3-5.)**

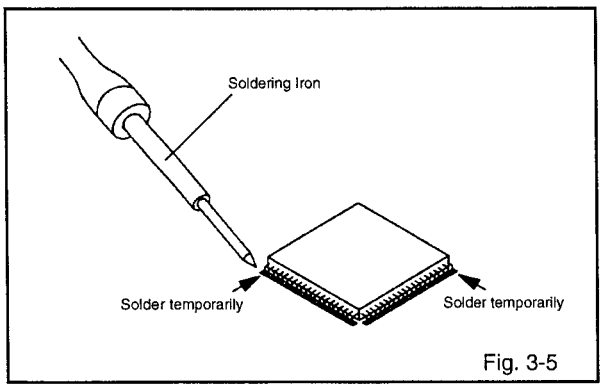


Fig. 3-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 3-6.)**

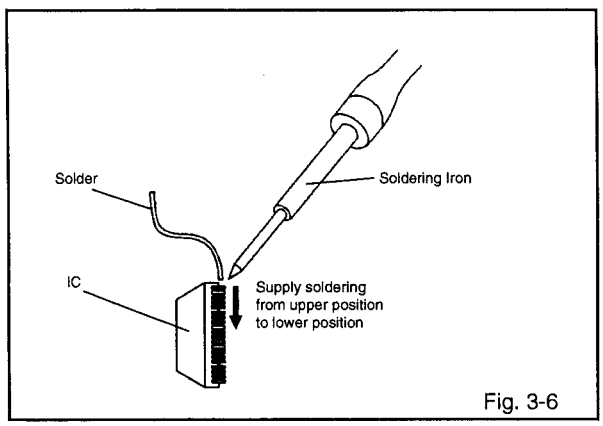


Fig. 3-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 3-7.)**

   NOTE

   Do not absorb the solder to excess.

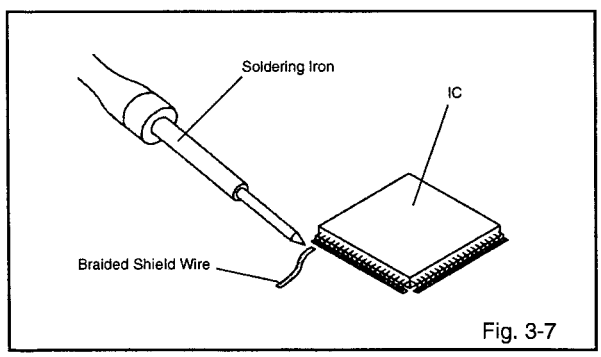


Fig. 3-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 3-8.)**

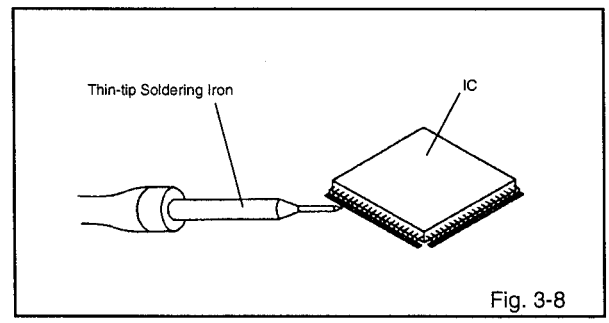


Fig. 3-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	A/C	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	BGP	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	C	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	DATA (SY-CE)	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	E	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	F	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	GEN	:	Generator
	GND	:	Ground
H	H.P.F	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	IC	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	KIL	:	Killer
L	L	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	M	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	NC	:	Non Connection
	NR	:	Noise Reduction
O	OSC	:	Oscillator
	OPE	:	Operation
P	PB	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	R	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	S. CLK	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

ERROR CODE LIST

If the error indications are appeared on the FIP, check the abnormal points by using the table below.

Indications	Error contents
Error : 00	Remocon code error
Error : 01	Reel mecha error
Error : 02	Cylinder mecha error
Error : 03	Mecha state error
Error : 04	Capstan mecha error

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

Method	Operations
Press both PLAY button and CH UP button on the set for more than 2 seconds.	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, the POWER ON total hours, and PLAY/REC total hours.
While pressing the CH UP key on the set, press the FF key on the set for more than 2 seconds.	PLAY/REC total hours are displayed on the TV Monitor. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
While pressing the CH UP button on the set, press the STOP button on the set for more than 2 seconds during PLAY.	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the deck can be operated without a cassette tape. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

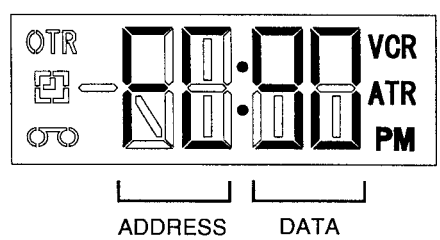
Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
TBrake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the display.
Total hours are displayed in 16 system of notation.

1. Turn on the POWER.
2. While pressing the CH UP button on the set, press the FF button on the set for more than 2 seconds.
3. Adjust the ADDRESS to "FD" by FF or REW button and read the DATA.
   (This DATA becomes the thousands digit and hundreds digit value of the following formula.)
4. Adjust the ADDRESS to "FE" by FF or REW button and read the DATA.
   (This DATA becomes the tens digit and ones digit value of the following formula.)
5. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

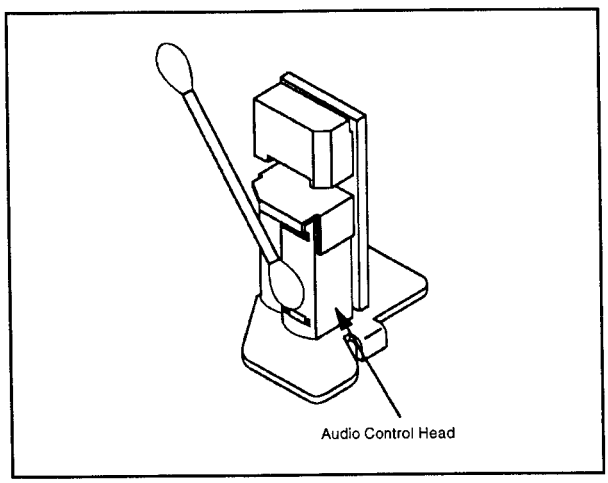
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

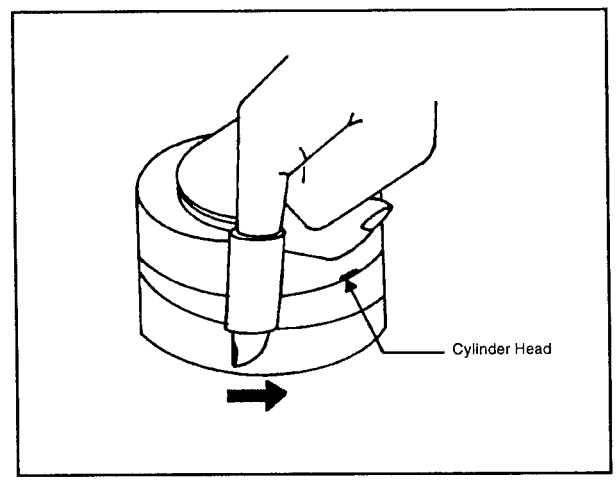
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
B0	-	-	-	-	-	-	-	-	-	00	88	15	44	40	02	38
C0	84	84	06	81	02	9F	90	37	81	B2	B2	9A	92	8C	00	00
D0	00	00	46	00	13	6A	55	5F	00	10	50	FF	5B	00	00	00
E0	00	00	00	00	00	00	00	00	00	00	00	5E	5E	00	00	50
F0	F2	40	02	00	00	20	00	00	00	00	00	00	90			

Table 1

1. Turn on the POWER.
2. While pressing the CH UP button on the set, press the FF button on the set for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

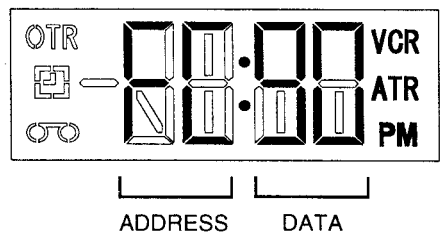


Fig. 1

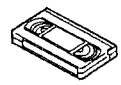
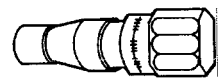
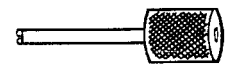
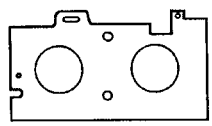
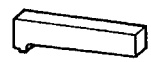
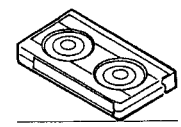
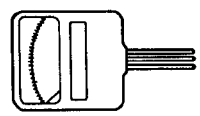
3. ADDRESS is now selected and should "blink". Using the FF or REW button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using FF or REW button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. While pressing the CH UP button on the set, press the FF button on the set for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

(For 2 head 1 speed model, 4 head model) VHS Alignment Tape JG001E (VP$_1$S-LI6^3) JG001F (VP$_1$S-CO1^3) JG001R (VP$_1$S-LI6^{3}H) JG001U (VP$_1$S-X6^3) 	**(For 2 head 2 speed model)** VHS Alignment Tape JG001C (VP$_2$S-LI6^3) JG001D (VP$_2$S-CO1^3) JG001V (VP$_2$S-X6^3) 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 
JG153 X Value Adjustment Screwdriver 	JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 
JG154 Cable 	Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG001E	APJG001E00	VHS Alignment Tape	Monoscope, 6KHz **(For 2 head 1 speed model, 4 head model)**
JG001F	APJG001F00	VHS Alignment Tape	Color Bar, 1KHz **(For 2 head 1 speed model, 4 head model)**
JG001R	APJG001R00	VHS Alignment Tape	Hi-Fi Audio **(For Hi-Fi model)**
JG001U	APJG001U00	VHS Alignment Tape	X Value Adjustment **(For 2 head 1 speed model, 4 head model)**
JG001C	APJG001C00	VHS Alignment Tape	Monoscope, 6KHz **(For 2 head 2 speed model)**
JG001D	APJG001D00	VHS Alignment Tape	Color Bar, 1KHz **(For 2 head 2 speed model)**
JG001V	APJG001V00	VHS Alignment Tape	X Value Adjustment **(For 2 head 2 speed model)**
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG005	APJG005000	Post Adjustment Screwdriver	Guide Roller Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG100A	APJG100A00	Torque Tape (VHT-063)	Playback Torque, Back Tension Torque During Playback
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the deck can be operated without a cassette tape.)
2. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a Cassette Tape.
   Turn on the power and re-check the cable bofore checking the trouble points.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

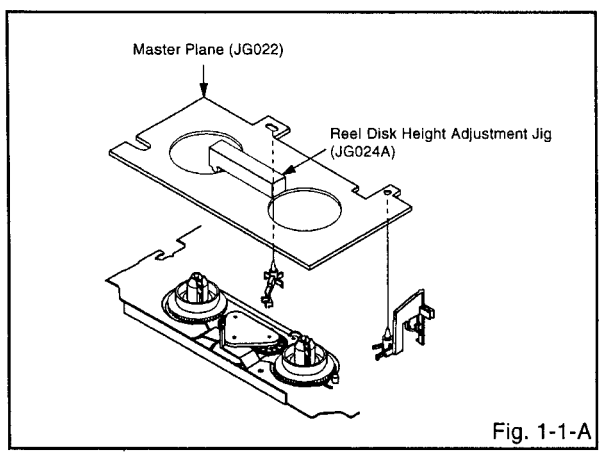


Fig. 1-1-A

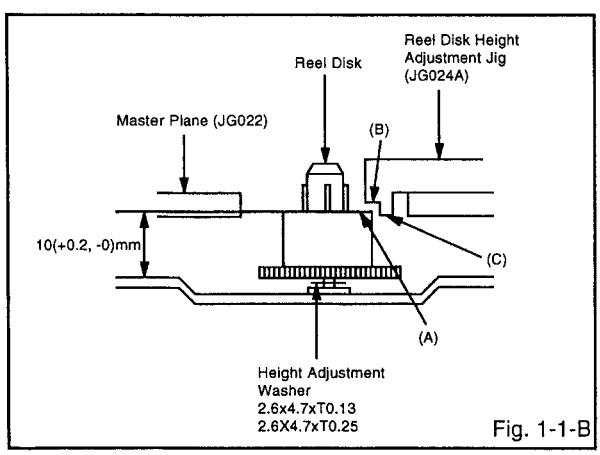


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

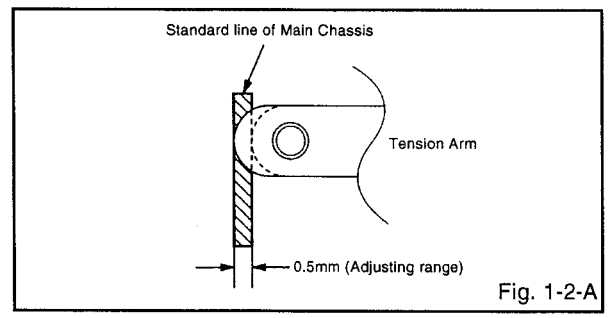
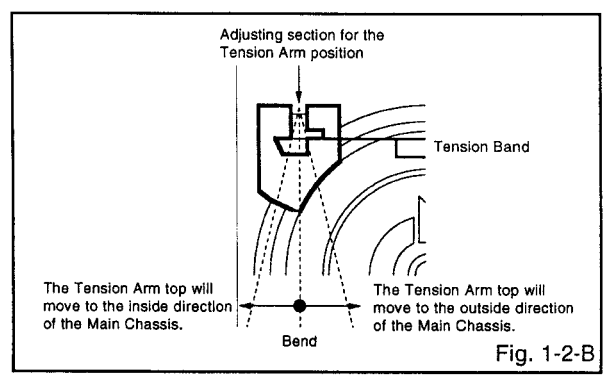


Fig. 1-2-A


Adjusting section for the Tension Arm position
Tension Band
The Tension Arm top will move to the inside direction of the Main Chassis.
The Tension Arm top will move to the outside direction of the Main Chassis.
Bend
Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(JG100A)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(JG100A)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

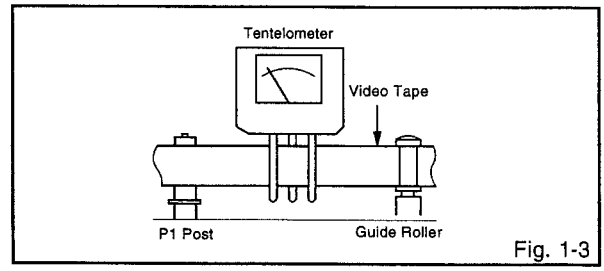


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

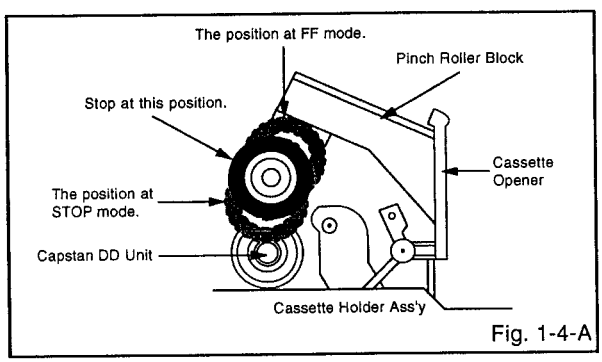


Fig. 1-4-A

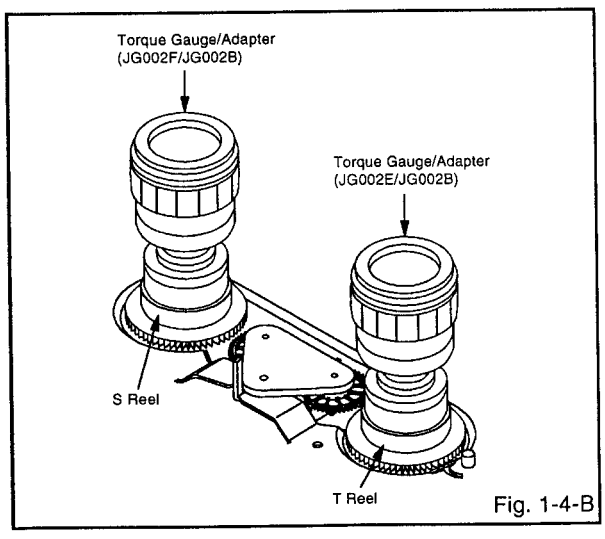


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape **(JG001C or JG001E)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
2. Connect CH-1 of the oscilloscope to **TP4002 (Envelope)** and CH-2 to **TP4001 (SW Pulse)**.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Adjusting Driver **(JG005)** slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. **(Refer to the ELECTRICAL ADJUSTMENTS)**

NOTE

After adjustment, confirm and adjust A/C head. **(Refer to item 2-2)**

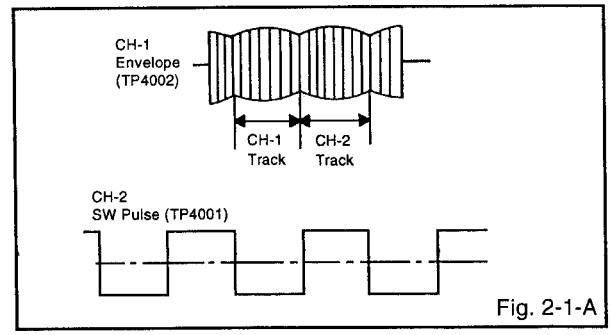


Fig. 2-1-A

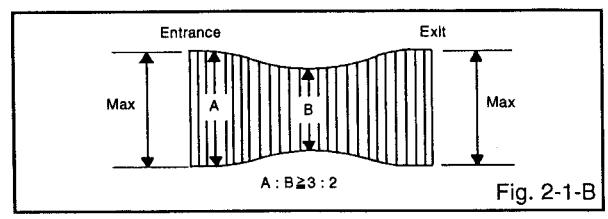


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape **(JG001C or JG001E). (Refer to SERVICING FIXTURE AND TOOLS)**
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A.**
   a) When the reflected picture is distorted, turn the screw (1) clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw (1) counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw (2) to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C.**
   c) When the height is not correct, turn the screw (3) to adjust the height. Then, adjust the 1~3 again.

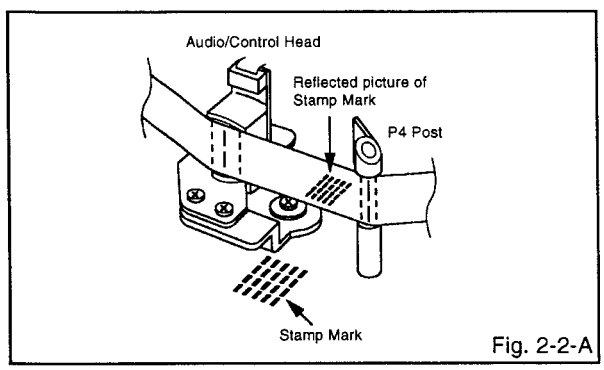


Fig. 2-2-A

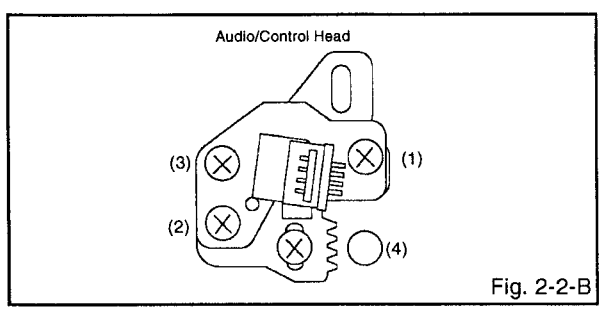


Fig. 2-2-B

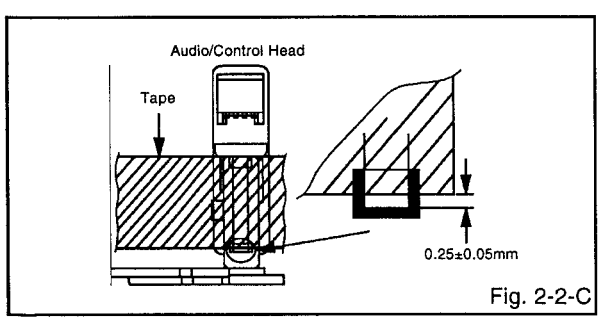


Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP4001**, CH-2 to **TP4002** and CH-3 to **HOT side of Audio Out Jack.**
6. Playback the VHS Alignment Tape **(JG001U or JG001V). (Refer to SERVICING FIXTURE AND TOOLS)**
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the (4) of **Fig. 2-2-B.** Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3.**

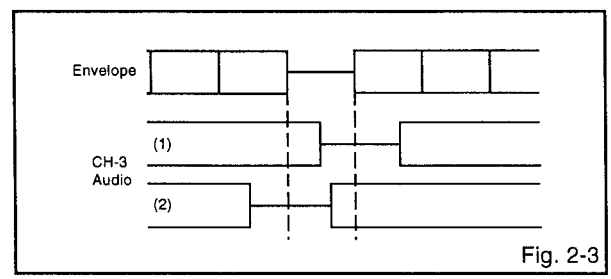


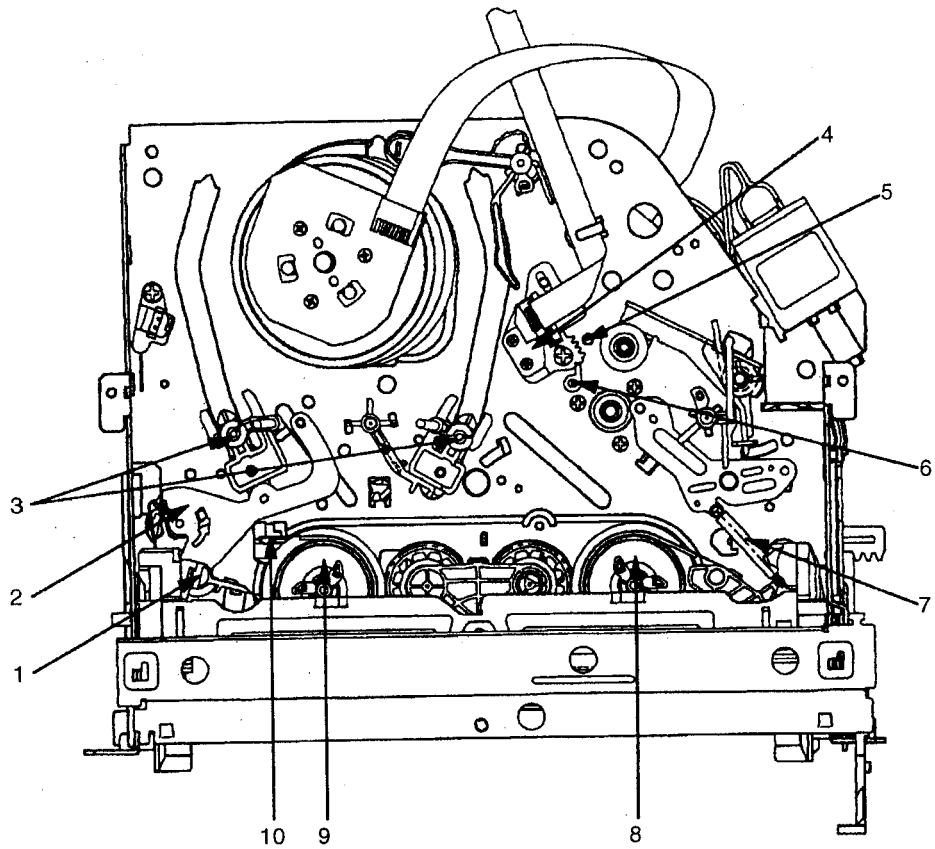
Fig. 2-3

2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to **TP4001** and CH-2 to the **Hi-Fi Audio Out Jack.**
2. Playback the VHS Alignment Tape **(JG001R). (Refer to SERVICING FIXTURE AND TOOLS)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
6. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
7. If the difference are more than 3 steps, set the X Value adjustment driver **(JG153)** to (4) of **Fig. 2-2-B.** Change the X Value and adjust it so that the value becomes within 2 steps.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When replacing IC's or transistor, use only specified silicon grease **(YG260M)**.
(To prevent the damage to IC's and transistors.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape **(JG001R)**

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP4002** and CH-2 to **pin 19 of J4504**.
2. Playback the alignment tape. **(JG001R)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press both CH UP button and STOP button on the set for more than 2 seconds. If the indicator ATR disappear's, the adjustment is finished. **(Refer to Fig. 1-1-A, B)**

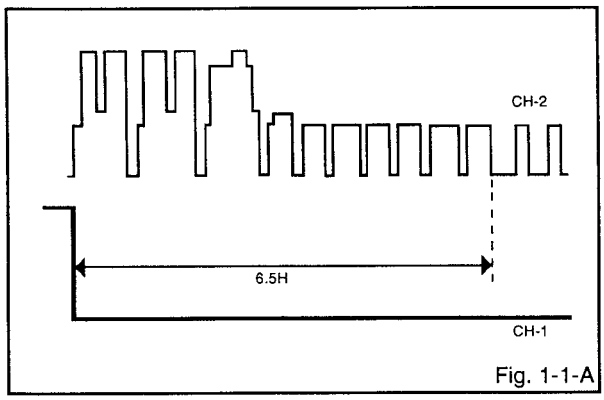


Fig. 1-1-A

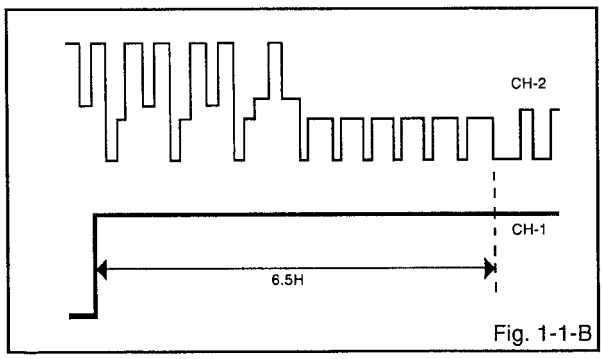


Fig. 1-1-B

1-2: PB-Y LEVEL

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape **(JG001F)**

INSTRUCTIONS

1. Connect the oscilloscope to **pin 19 of J4504** through 75 ohm resistor.
2. Playback the alignment tape. **(JG001F)**
3. Check if the VIDEO OUTPUT LEVEL is 1.05 ± 0.15Vp-p. **(Refer to Fig. 1-2)**

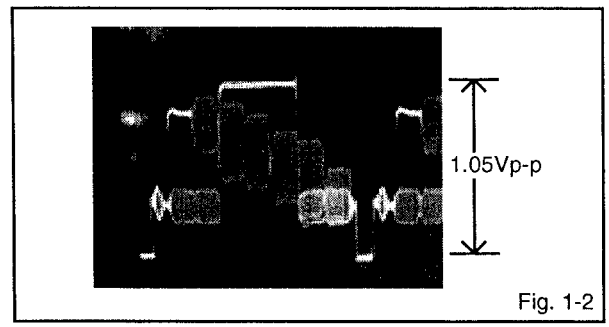


Fig. 1-2

1-3: E-E LEVEL

CONDITIONS

MODE-STOP
Input Signal-PAL Color Bar

INSTRUCTIONS

1. Connect the color bar generator to **pin 20 of J4504**.
2. Connect the oscilloscope to **pin 19 of J4504** through 75 ohm resistor.
3. Check if the VIDEO OUTPUT LEVEL is 1.05 ± 0.15Vp-p. **(Refer to Fig. 1-3)**

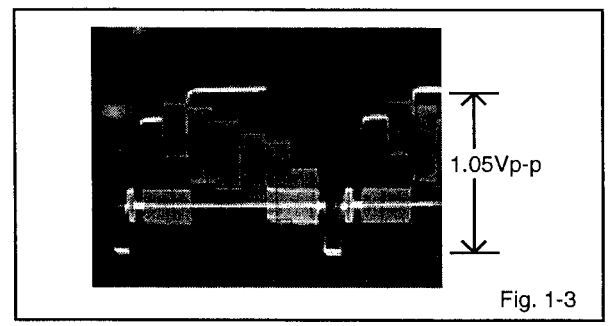


Fig. 1-3

1-4: E-E AUDIO LEVEL

CONDITIONS

MODE-STOP
Input Signal-Audio Signal: 1KHz, 500mVrms
Input Select-AV

INSTRUCTIONS

1. Connect the color bar generator to **pins 2 and 6 of J4504**.
2. Connect the AC voltmeter to **pins 1 and 3 of J4504** through 47K ohm resistor.
3. Check if the AUDIO OUTPUT LEVEL is 500(mVrms) ± 2(dB)

ELECTRICAL ADJUSTMENTS

1-5: PB AUDIO LEVEL

CONDITIONS

MODE-Self (RECORD and PLAYBACK)
Input Signal-Audio Signal: 1KHz, 500mVrms
Video Signal: PAL Color Bar
Input Select-AV

INSTRUCTIONS

1. Connect the color bar generator to **pin 20 of J4504.**
2. Connect the audio generator to **pins 2 and 6 of J4504.**
3. Connect the AC voltmeter to **pins 1 and 3 of J4504** through 47K ohm resistor.
4. After the input of audio signal and video signal, proceed with the recording.
5. Playback the recorded section and check if the AUDIO OUTPUT LEVEL is 500(mVrms) ± 2(dB).

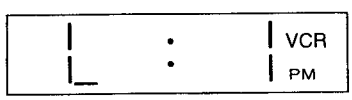
1-6: SEPARATION

CONDITIONS

MODE-STOP
AUDIO OUTPUT SW: STEREO POSITION
Input Signal-RF Signal

INSTRUCTIONS

1. Receive the audio signal (L ch: No Signal, R ch: 1KHz).
2. Connect the AC voltmeter to **AUDIO OUT (L ch).**
3. Press both CH UP button and STOP button on the set for more than 3 seconds.
   The fluorescent display on the set displays as below.

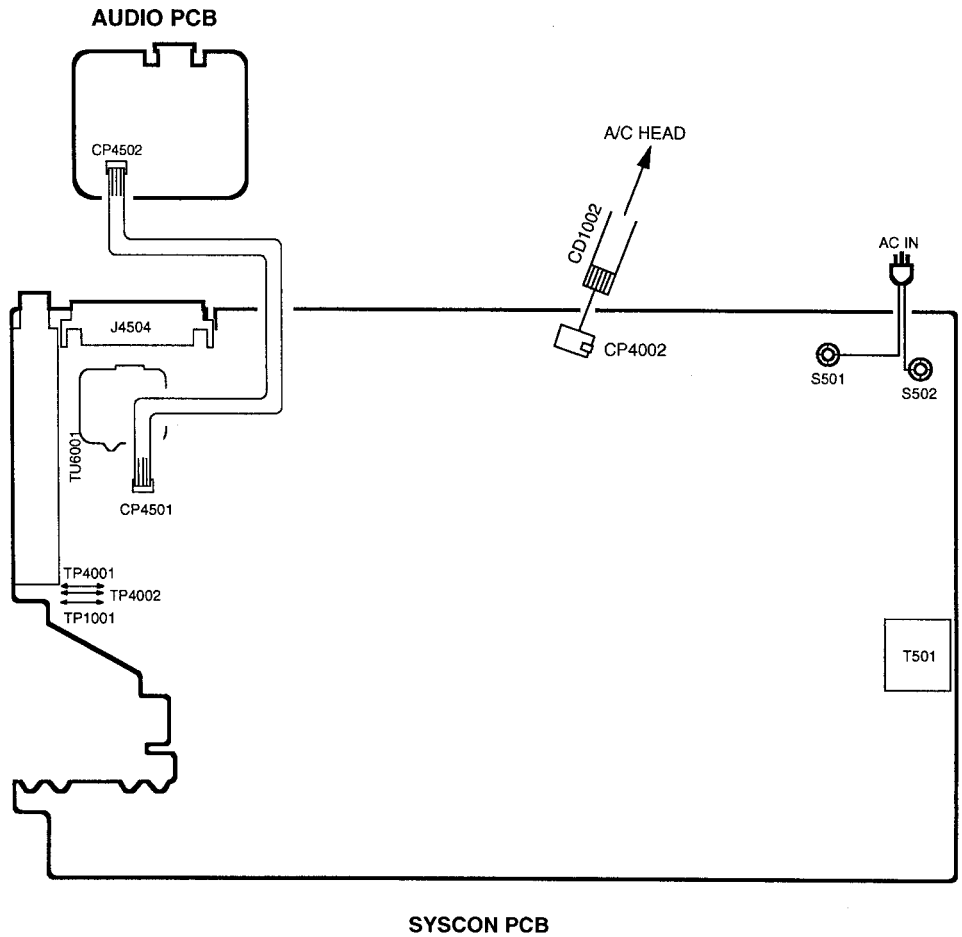


4. Press the F.FWD or REW button on the remote control.
   The fluorescent display on the set displays as below.

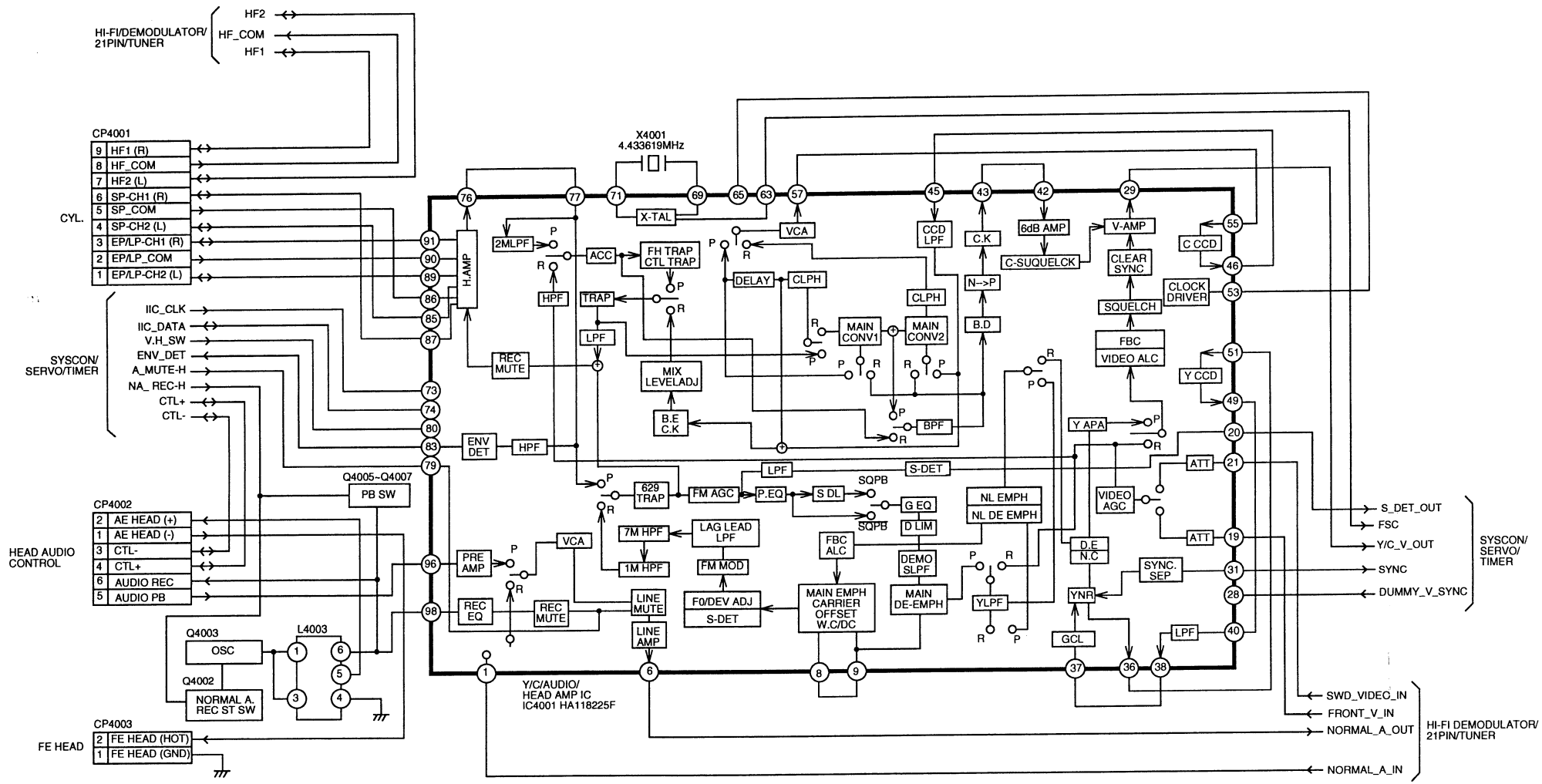
5. Adjust the F.FWD and REW button on the remote control until output signal is minimum. (more than 25dB)
6. Press both CH UP button and STOP button of the set together to complete the adjustment.
7. Receive the audio signal (L ch: 1KHz, R ch: No Signal).
8. Connect the AC voltmeter to **AUDIO OUT (R ch).**
9. Repeat steps 3~6.

ELECTRICAL ADJUSTMENTS

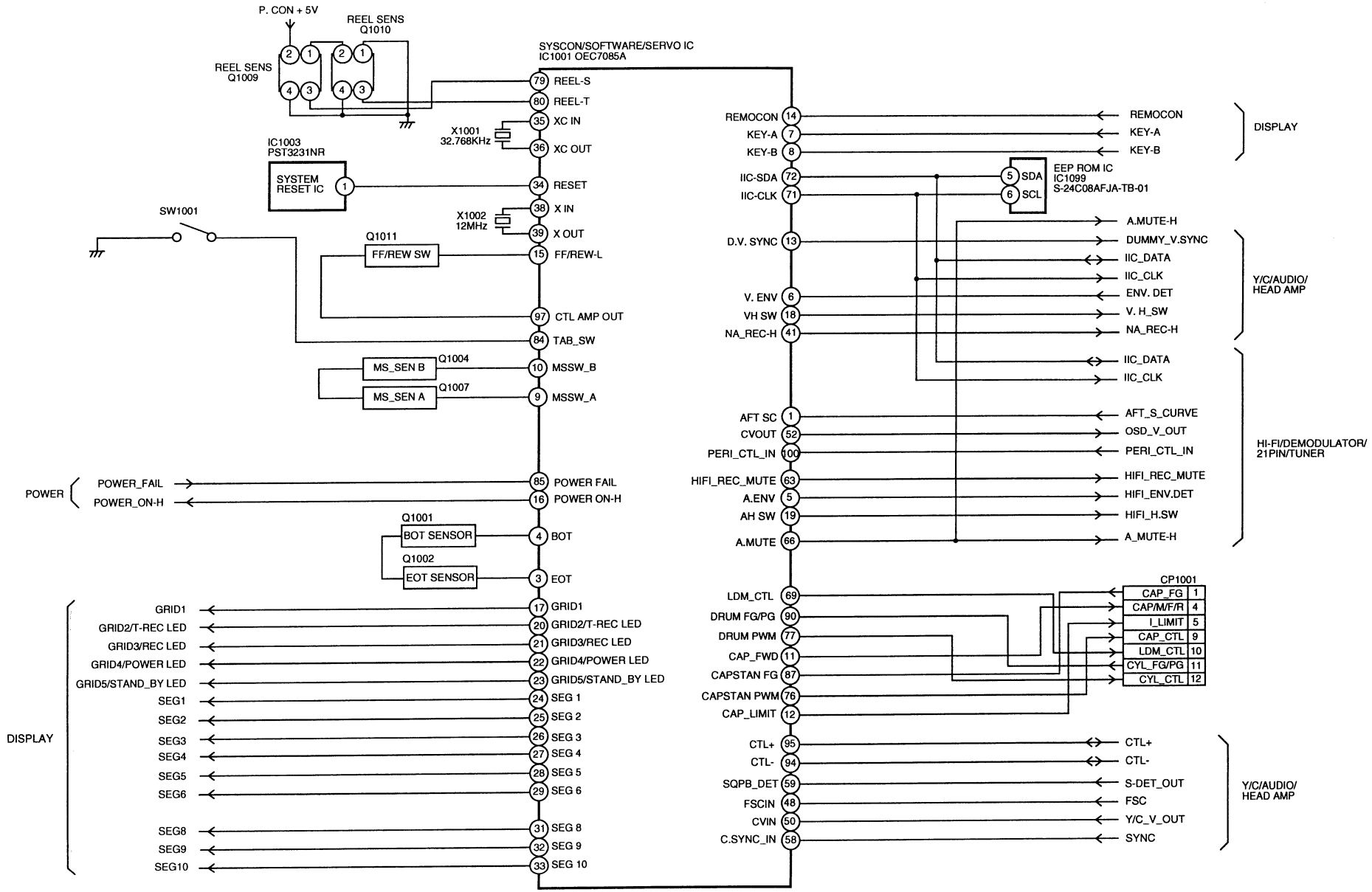
2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



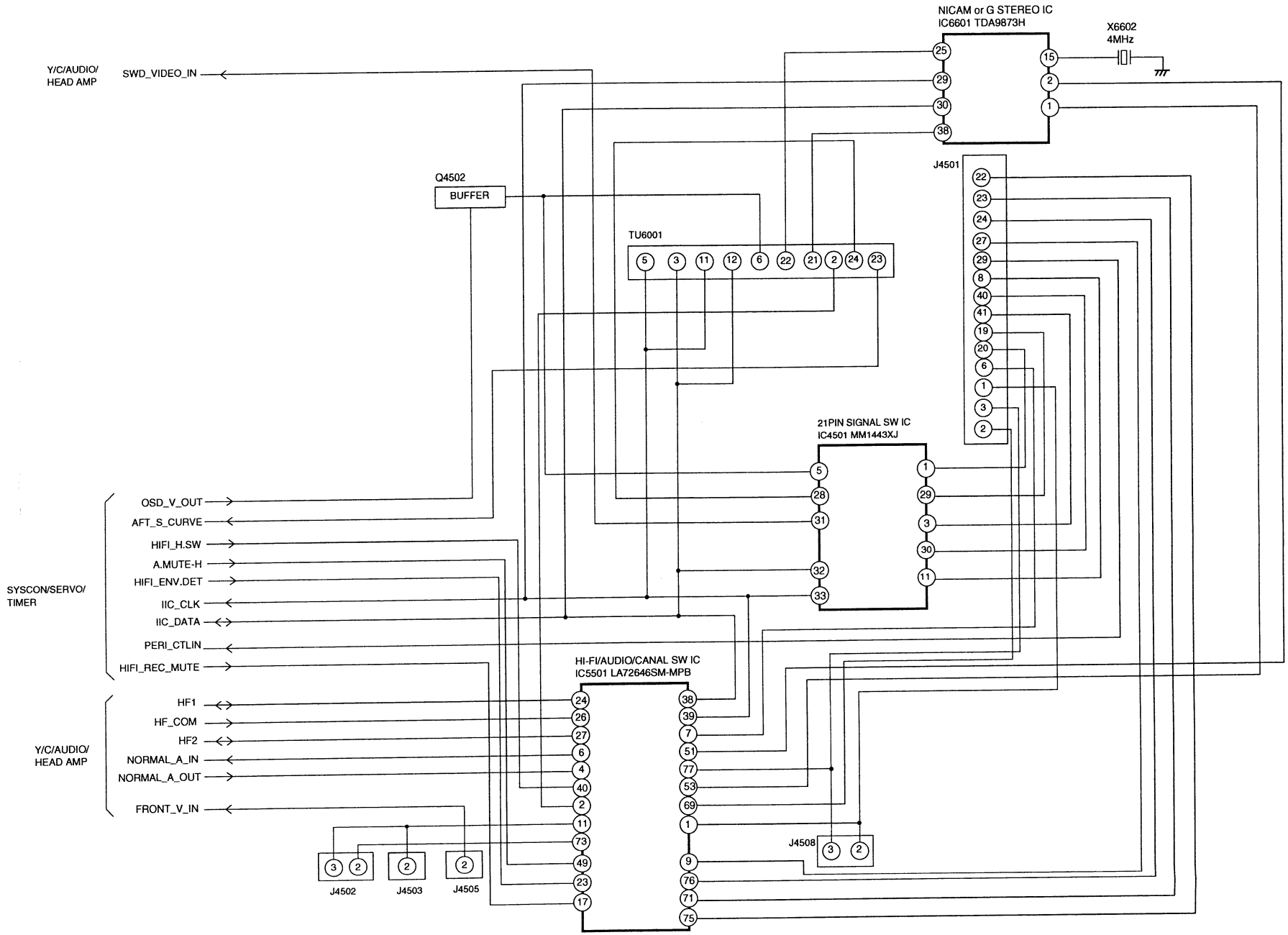
Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM



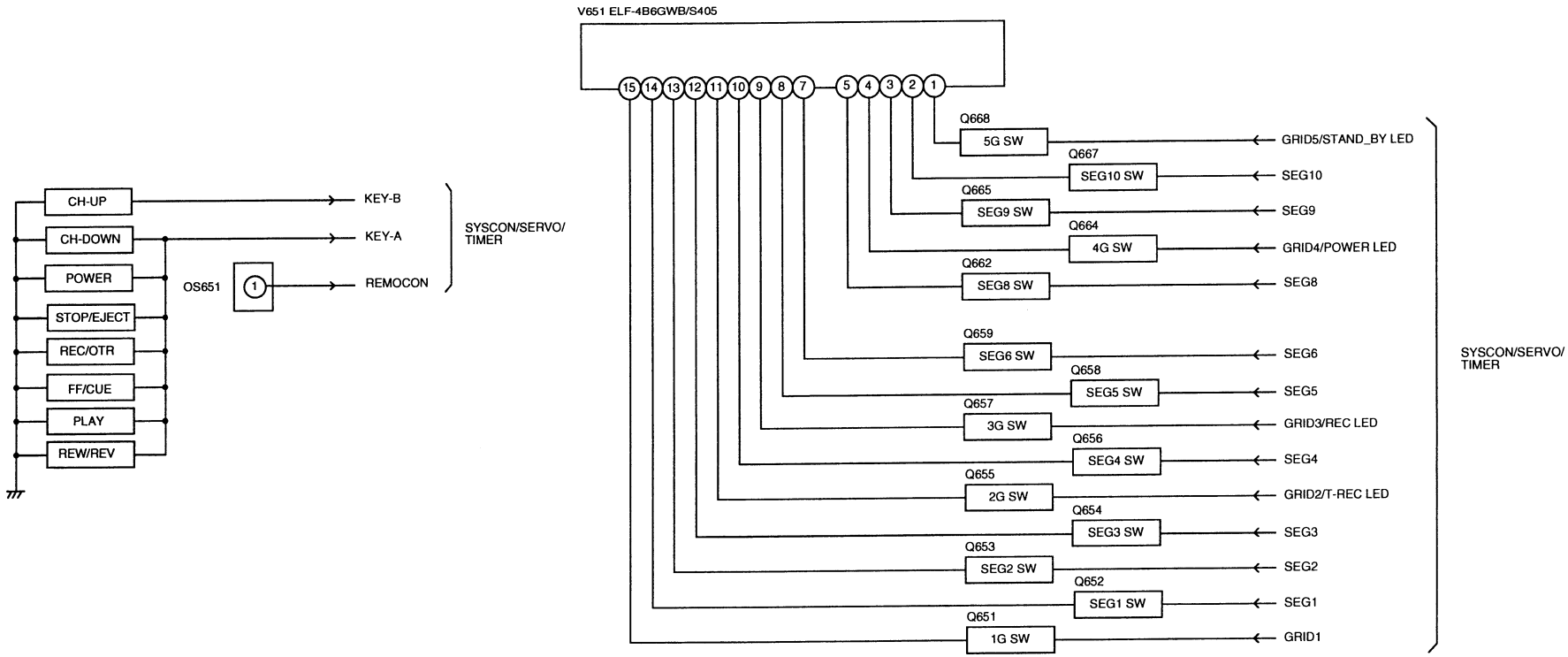
SYSTEM CONTROL/SERVO/TIMER BLOCK DIAGRAM



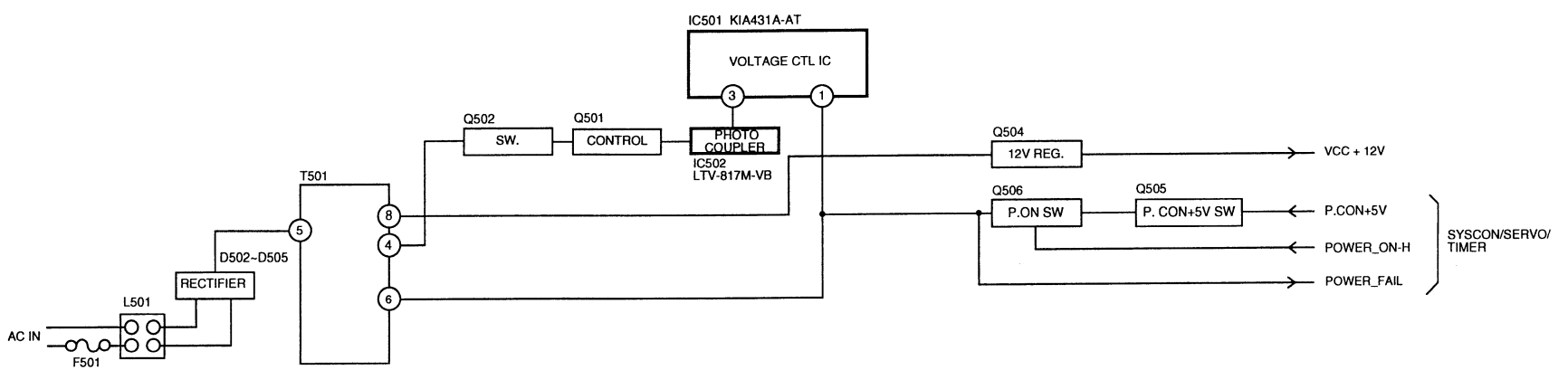
HI-FI/DEMODULATOR/21PIN/TUNER BLOCK DIAGRAM



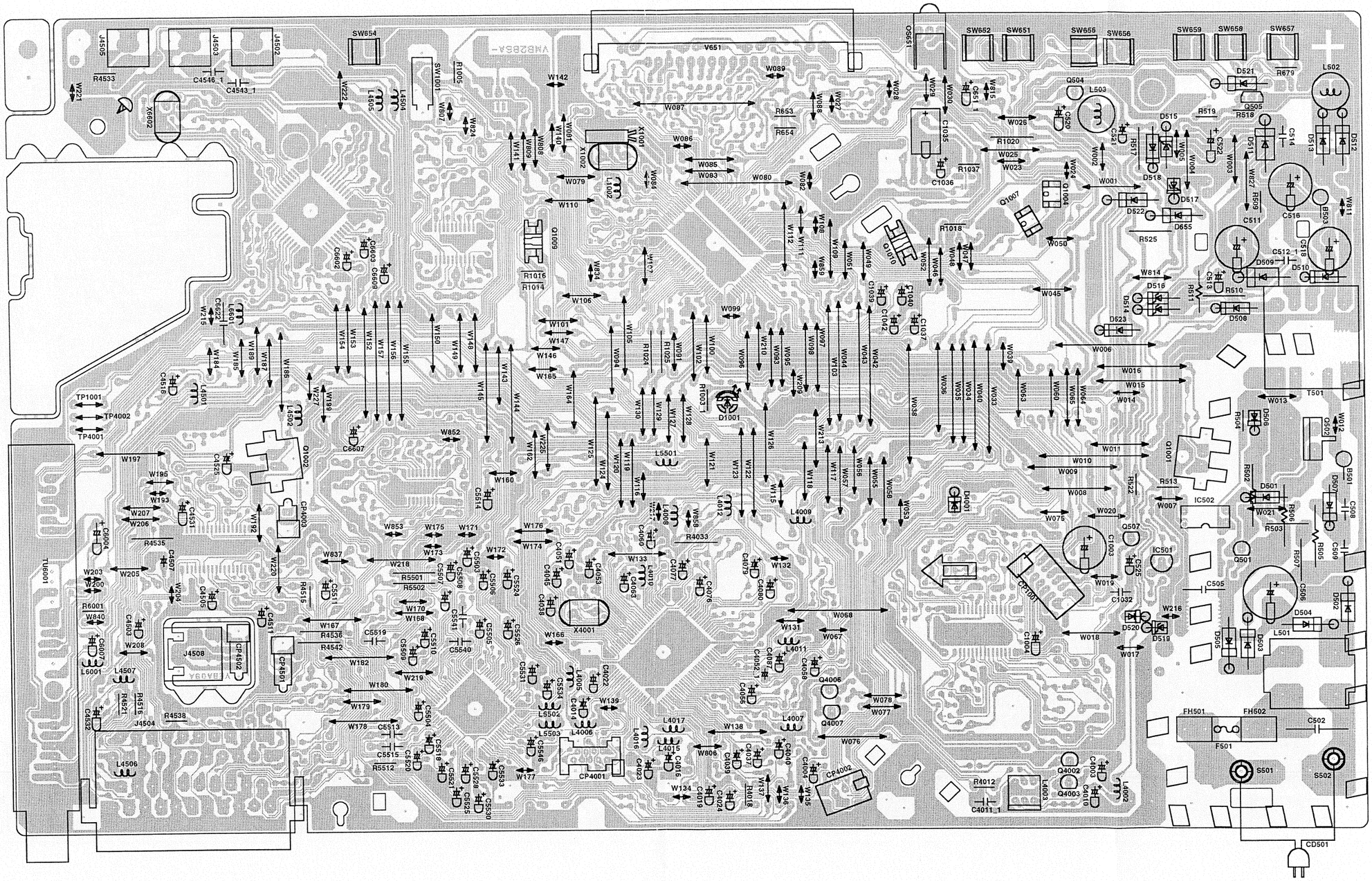
DISPLAY BLOCK DIAGRAM



POWER BLOCK DIAGRAM



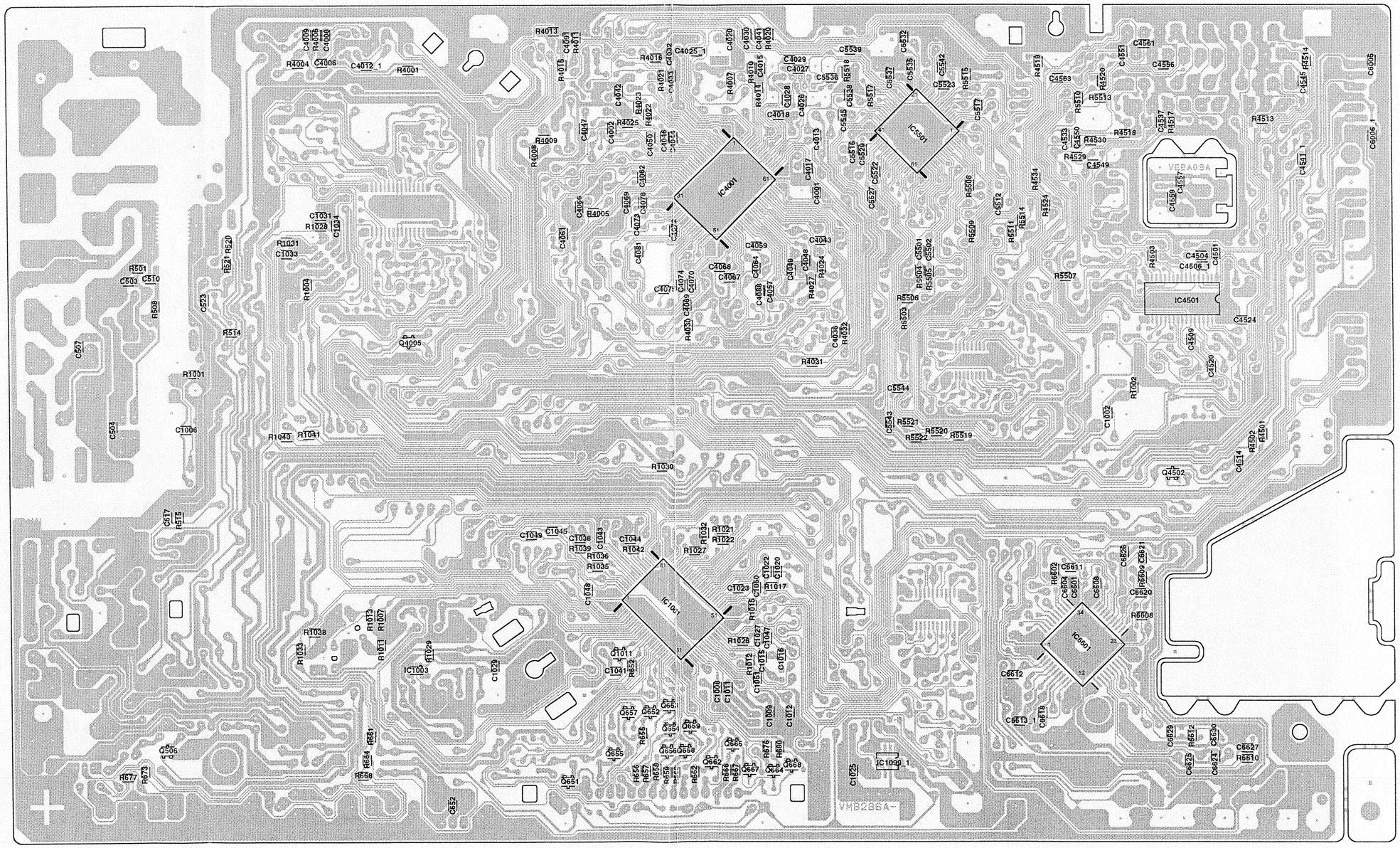
PRINTED CIRCUIT BOARDS
SYSCON/AUDIO (INSERTED PARTS)
SOLDER SIDE



F-1

F-2

PRINTED CIRCUIT BOARDS
SYSCON/AUDIO (CHIP MOUNTED PARTS)
SOLDER SIDE



Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM

(SYSCON PCB)

FROM/TO SYSCON/SERVO/TIMER
V.H_SW
NA_REC-H
DUMMY_V.SYNC
SYNC
A_MUTE-H
IIC_DATA
IIC_CLK
ENV.DET
CTL+
CTL-
MESECAM-H
S_DET_OUT
FSC
Y/C_V_OUT
NTSC4.43/3.58

FROM POWER
P.CON+5V
AT+5.8V
GND

FROM/TO HI-FI/DEMODULATOR
NORMAL_A_IN
NORMAL_A_OUT
HF1
HF2
HF_COM

FROM 21PIN/VPS/TUNER
SWD_VIDEO_IN
FRONT_V_IN

FROM/TO CYL
CP4001 TOC-C09X-A1

9	HF1 (R)	HF1
8	HF_COM	HF_COM
7	HF2 (L)	HF2
6	SP-CH1 (R)	SP-R
5	SP_COM	SP_COM
4	SP-CH2 (L)	SP-L
3	EP/LP-CH1 (R)	EP-R
2	EP/LP_COM	EP_COM
1	EP/LP-CH2 (L)	EP-L

FROM/TO HEAD AUDIO CONTROL
CP4002
IMSA-9604S-06Z13

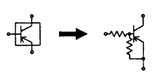
1	AE HEAD(-)	
2	AE HEAD(+)	
3	CTL-	CTL-
4	CTL+	CTL+
5	AUDIO PB	
6	AUDIO REC	

TO FULL ERASE HEAD
CP4003
B2013H02-2P

1	FE HEAD(GND)	
2	FE HEAD(HOT)	

Y/C/AUDIO/CCD/HEAD AMP IC
IC4001
HA118225F

CAUTION: DIGITAL TRANSISTOR



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

PCB010
VMB286

SYSTEM CONTROL/SERVO/TIMER SCHEMATIC DIAGRAM

(SYSCON PCB)

FROM/TO POWER

GND (S/S)
GND (MOTOR)
CENT_LED_VCC
POWER_ON-H
POWER_FAIL
AT+5V
AT+5V[BACKUP]
P.CON+5V
CAP_VCC
AT+12.6V

C1003 35V 330 YK
C1004 6.3V 330 YK

FROM/TO DECK

CP1001
TMC-J12P-B2

1	CAP_FG
2	CAP_VCO
3	VCC
4	CAP/M/F/R
5	I LIMIT
6	GND[M]
7	GND
8	LD/CY_VCO
9	CAP_CTL
10	LDM_CTL
11	CYL_FG/PG
12	CYL_CTL

R1004 3.3K

CAP_FG
CAP_F/R
CAP_LIMIT
CAP_CTL
CYL_FG/PG
CYL_CTL

SEG8
SEG9
SEG10
RESET
C1008 15P CH
X1001 100DA32R01 32.768KHz
C1011 18P CH
C1009 18P CH
X1002 100CT01207 12MHz
C1012 18P CH
NA_REC-H
C1051 0.01 B
C1015 15P CH
R1012 33K
L1002 2.2uH
C1016 15P CH
C1047 0.0047 B
C1027 0.01 B
R1026 1K
FSC

SYSCON'SOFTWARE/SERVO IC
IC1001
OEC7085A

(29) SEG 6
(30) SEG 7
(51) SERVICE1
(52) CVOUT
(53) OSD VCC

SEG6 SEG5 SEG4 SEG3 SEG2 SEG1 GRID5/STAND_BY_LED GRID4/POWER_LED GRID3_REC_LED GRID2/T-REC_LED HIFI_H.SW V.H_SW GRID1 POWER_ON-H REMOCON DUMMY_V.SYNC CAP_LIMIT CAP_F/R MSSW_B MSSW_A KEY_B KEY_A ENV_DET HIFI_ENV.DET BOT EOT AFT_S_CURVE PERI_CTL_IN CTL+ CTL-

R1020 1K 1/4W
R1038 10K
R1033 10K
W859
FF/REW_SW Q1011 KRC103SRTK
C1038 0.001 B
R1039 10K
C1048 0.01 B
C1041 0.1 B
R1035 560
R1036 560
C1045 0.0039 B
C1039 16V 10 KA
C1049 0.01 B
C1040 50V 4.7 KA
C1042 50V 4.7 KA
C1037 6.3V 47 KA
R1040 1K
CYL_FG/PG
C1043 0.0022 B
R1041 1K
CAP_FG
C1044 0.0039 B
TAB_SW
R1042 22K

1 AFT SC
2 AGC DET
3 EOT

CTL AMP OUT
AMP C
CTL +
CTL -
C
AMP VREFIN
AMP VREFOUT
DRUM FG/PG
MESECAM-H
AMP VSS
CAPSTAN FG
SECAM-H
POWER FAIL
TAB_SW
NTSC4.43/3.58
NTSC-H
BBE-H
A VCC
AMP VCC
PERI_CTL_IN

78 CAPSTAN FULL
79 REEL-S
80 REEL-T

NC 0 3.8 2.9 3.8 3.8 0.9 4.0 4.0 4.0 4.0 2.4 2.4 4.0 4.9 4.9 0 3.4 4.9 4.8 4.8 4.9 4.9 0 0 4.7 4.7 0 4.6
(30) (29) (28) (27) (26) (25) (24) (23) (22) (21) (20) (19) (18) (17) (16) (15) (14) (13) (12) (11) (10) (9) (8) (7) (6) (5) (4) (3) (2) (1)
0 (31) SEG 8
3.8 (32) SEG 9
2.9 (33) SEG 10
4.9 (34) RESET
1.4 (35) XCIN
1.0 (36) XCOUT
4.9 (37) VCC
4.4 (38) X IN
2.2 (39) X OUT
0 (40) VSS
4.8 (41) NA_REC-H
4.4 (42) VV-H
NC 4.9 (43) CLKSEL
2.2 (44) OSC_IN
2.2 (45) OEC_OUT
0 (46) NUB
1.7 (47) LP
2.2 (48) FSCIN
0 (49) OSC VSS
2.3 (50) CVIN
(51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80)
4.9 2.3 4.9 2.0 0.4 0 0 0.3 0 0 4.8 0 0 0 0 0 0 0 2.5 4.9 1.4 1.3 0 0 0 2.6 2.5 2.6 5.0 0
NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC

(10) PERI_CTL_IN 0
(9) A VCC 4.9
(8) AMP VCC 4.9
(7) CTL AMP OUT 2.4
(6) AMP C 2.4
(5) CTL + 2.4
(4) CTL - 2.4
(3) C 0.1
(2) AMP VREFIN 0.4
(1) AMP VREFOUT 2.4
(80) DRUM FG/PG 1.3
(79) MESECAM-H 0
(78) AMP VSS 0
(77) CAPSTAN FG 20
(76) SECAM-H 0.6
(75) POWER FAIL 4.4
(74) TAB_SW 4.9
(73) NTSC4.43/3.58 0
(72) NTSC-H NC
(71) BBE-H NC

C1023 0.001 B
C1022 220P CH
R1017 1K
C1020 0.068 B
W834
C1050 0.01 B
OSD_V_OUT
R1021 5.6K
R1022 3.3K
R1025 100 1/4W
R1024 100 1/4W
R1027 22K
R1032 220
C1031 0.0068 B
R1030 33K
C1032 0.1 F
R1031 4.7K
C1033 0.1 B
R1028 22K
C1034 0.0033 B

SYNC
S_DET_OUT
HIFI_REC_MUTE
A_MUTE-H
IIC_CLK
IIC_DATA
CAP_CTL
CYL_CTL
REEL_S
REEL_T
MESECAM-H
POWER_FAIL
NTSC4.43/3.58

FROM/TO Y/C/AUDIO/HEAD AMP

V.H_SW
NA_REC-H
DUMMY_V.SYNC
SYNC
A_MUTE-H
IIC_DATA
IIC_CLK
ENV.DET
CTL+
CTL-
MESECAM-H
S_DET_OUT
FSC
Y/C_V_OUT
NTSC4.43/3.58

FROM/TO DISPLAY

SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG8
SEG9
SEG10
GRID1
GRID2/T-REC_LED
GRID3_REC_LED
GRID4/POWER_LED
GRID5/STAND_BY_LED
KEY-A
KEY_B
REMOCON

FROM/TO HI-FI/DEMODULATOR

HIFI_REC_MUTE
HIFI_ENV.DET
HIFI_H.SW
IIC_CLK
IIC_DATA
A_MUTE-H

FROM/TO 21PIN/VPS/TUNER

PERI_CTL_IN
IIC_CLK
IIC_DATA
OSD_V_OUT
AFT_S_CURVE

BOT SENSOR Q1001 ST-304L
EOT SENSOR Q1002 ST-304L
C1002 0.001 B
C1006 0.001 B
EOT
BOT

R1001 180K
R1002 270K
CENTER LED D1001 LTE-3271T-012A-O
CENT_LED_VCC
R1005 47K 1/4W
TAB_SW
R1003_1 330 1/4W
TAB SW SW1001 LSA-1144EAU

R1015 10K
SERVICE TP1001 NC
Y/C_V_OUT
W824
W807

MS_SEN B Q1004 RPI-352C40N
MS_SEN A Q1007 RPI-352C40N
R1007 33K
R1011 120
R1013 33K
MSSW_B
MSSW_A
REEL_S
REEL_T
R1014 47K 1/4W
R1016 120 1/4W
R1018 47K 1/4W
REEL SENSOR Q1009 RPI-303
REEL SENSOR Q1010 RPI-303
(17)
(18)

W808 IIC_DATA
W809 IIC_CLK
C1025 100P CH
EEP ROM IC IC1099_1 S-24C08AFJA-TB-G
SDA SCL TEST VCC VSS A2 A1 A0
C1029 0.47 F

R1029 47K RESET
SYSTEM RESET IC IC1003 PST3231NR
OUT IN GND
C1035 5.5V 0.047F
R1037 18K 1/4W
C1036 16V 10 KA

CAUTION: DIGITAL TRANSISTOR

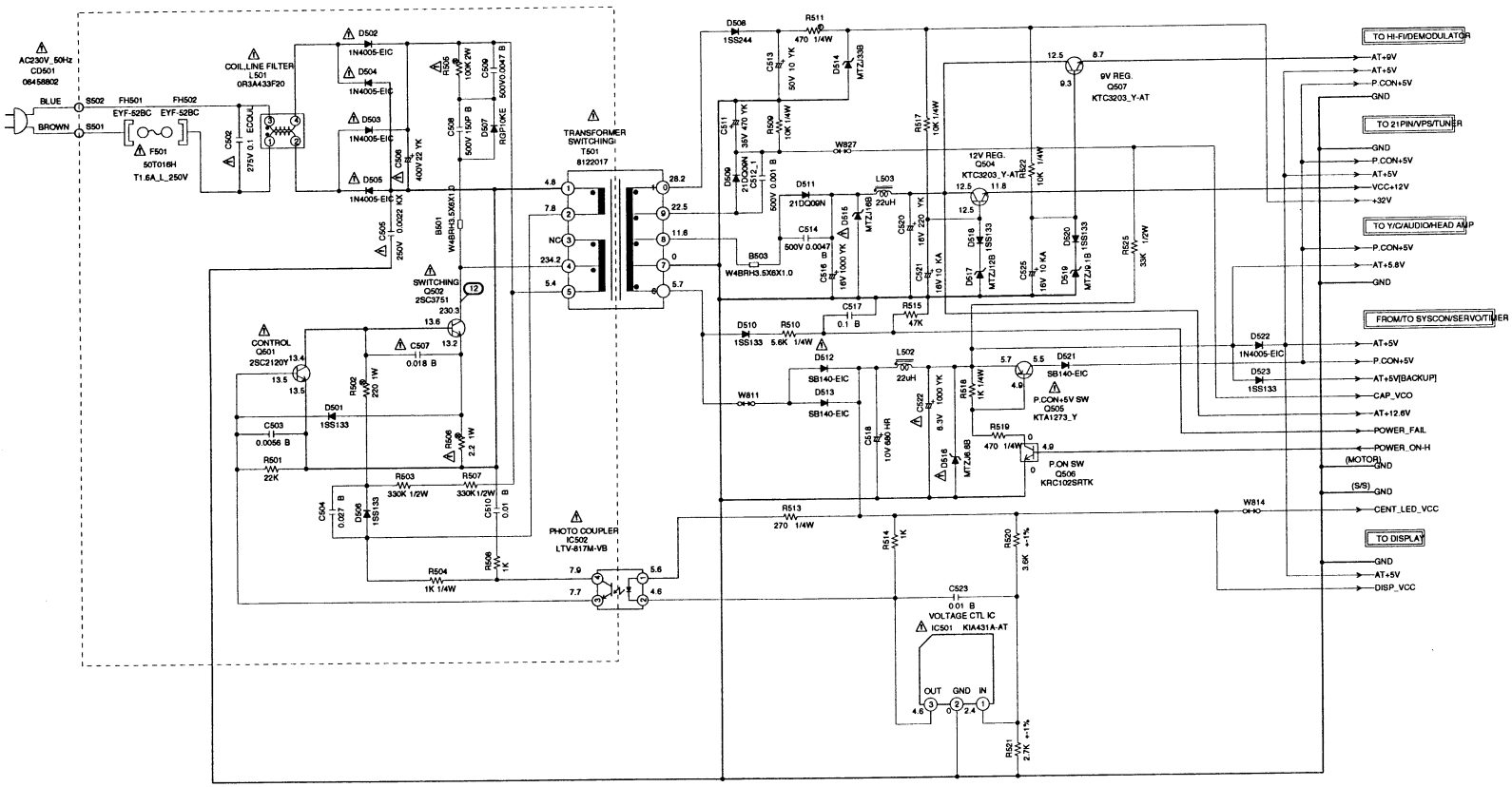
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB010
VMB286

POWER SCHEMATIC DIAGRAM

(SYSCON PCB)



PCB010
VMB284

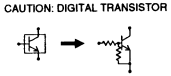
CAUTION: FOR SAFETY, ALWAYS REPLACE THESE PARTS MARKED ⚠ WITH PARTS WHICH ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY

ATTENTION: POUR LA SECURITE, REMPLACER LES PIECES REPAREES PAR ⚠ UNIQUEMENT PAR DES PIECES IMPORTANTES DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

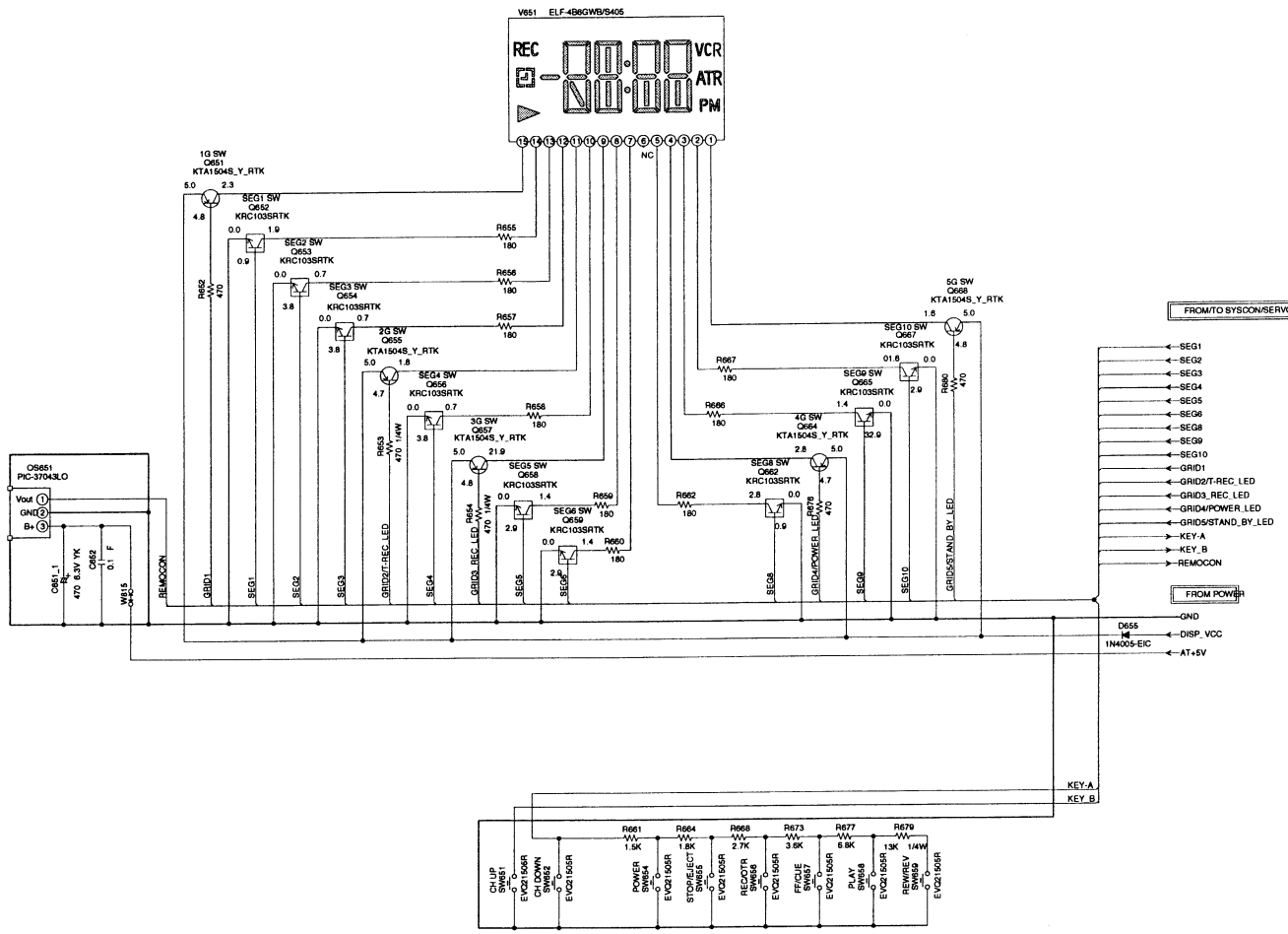
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

CAUTION: DIGITAL TRANSISTOR



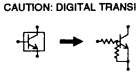
DISPLAY SCHEMATIC DIAGRAM

(SYSCON PCB)



PCB010
VMB286

CAUTION: DIGITAL TRANSISTOR

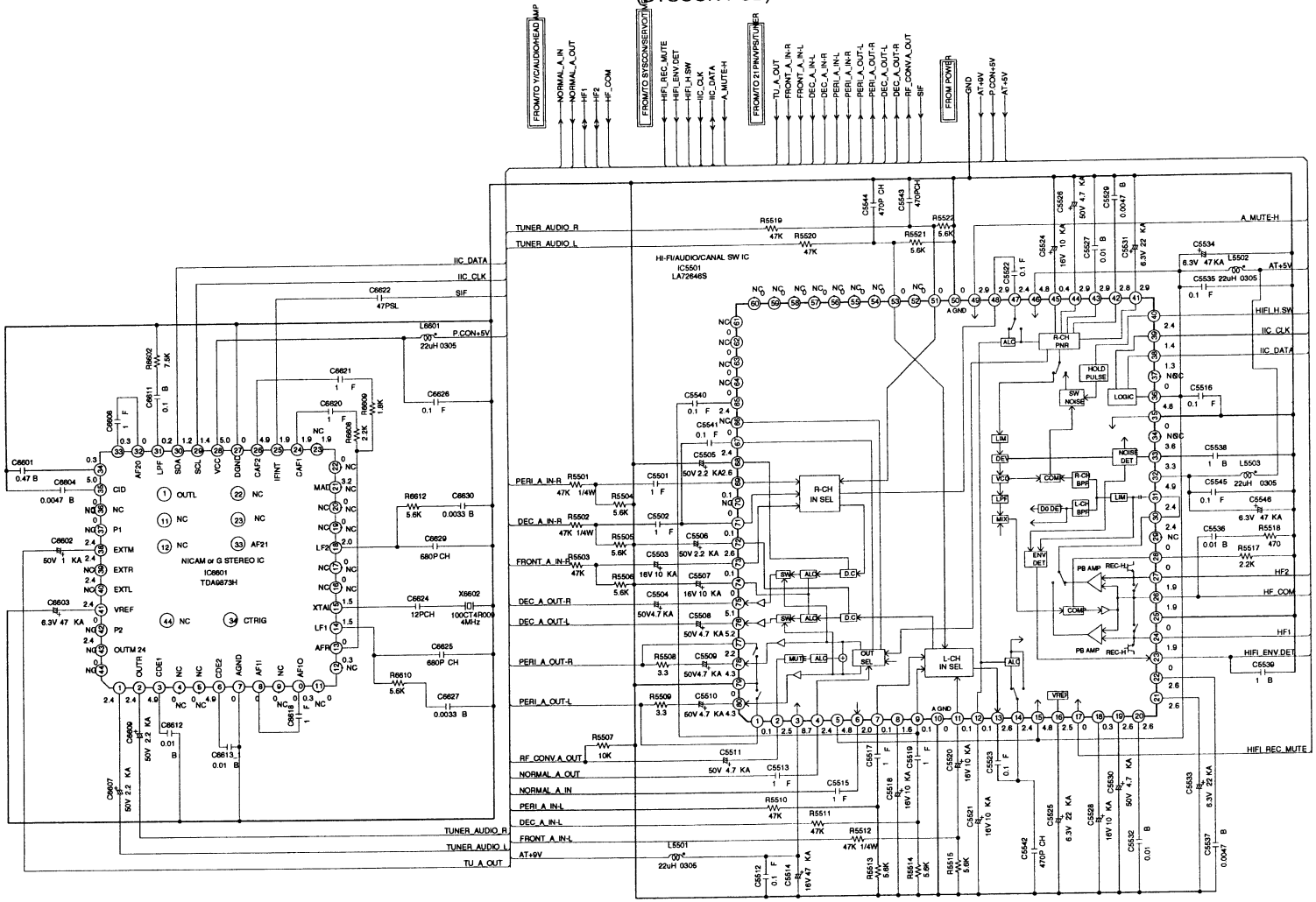


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

HI-FI/DEMODULATOR SCHEMATIC DIAGRAM

(SYSCON PCB)



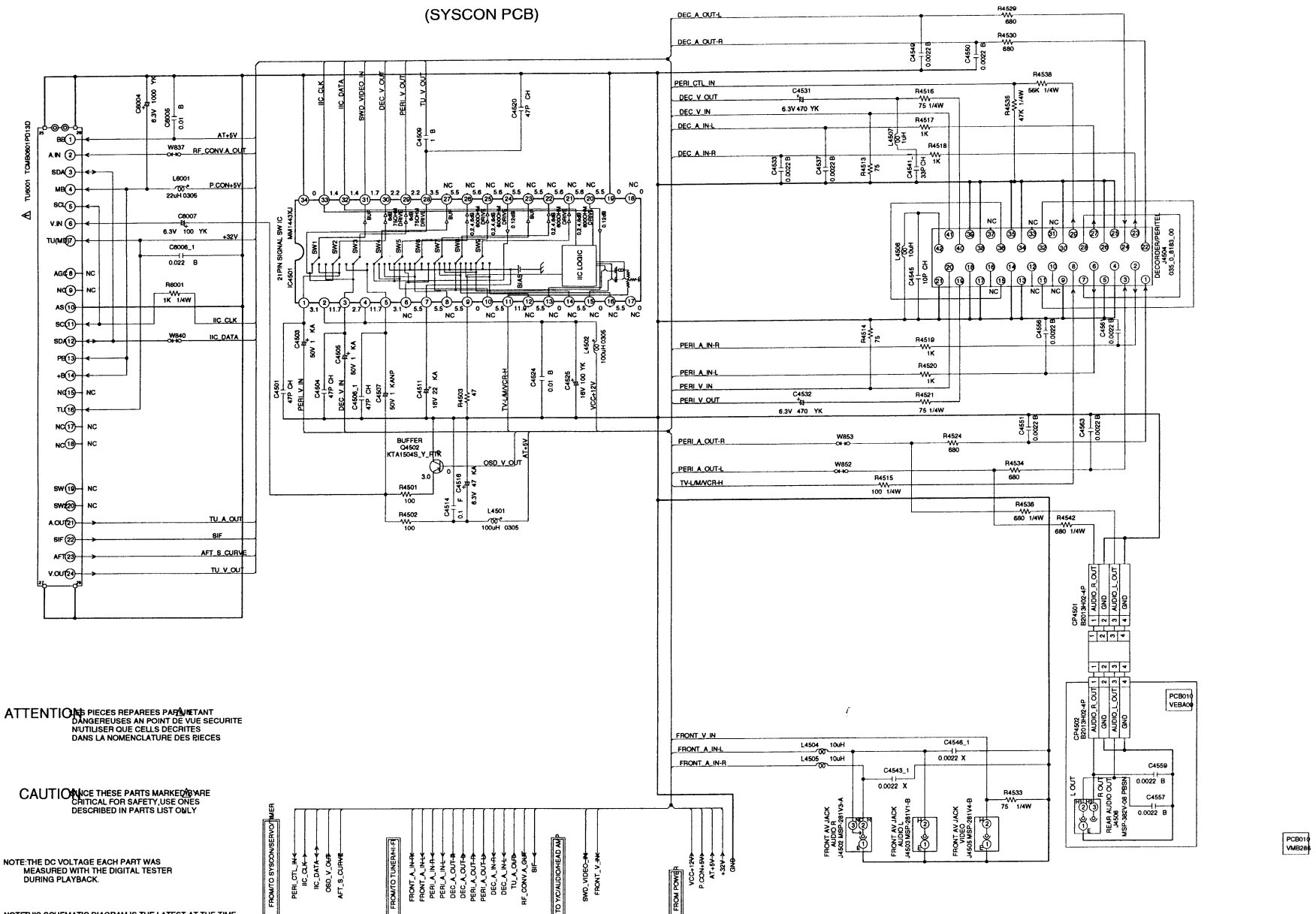
PCB010
VMB286

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

21PIN/VPS/TUNER SCHEMATIC DIAGRAM

(SYSCON PCB)



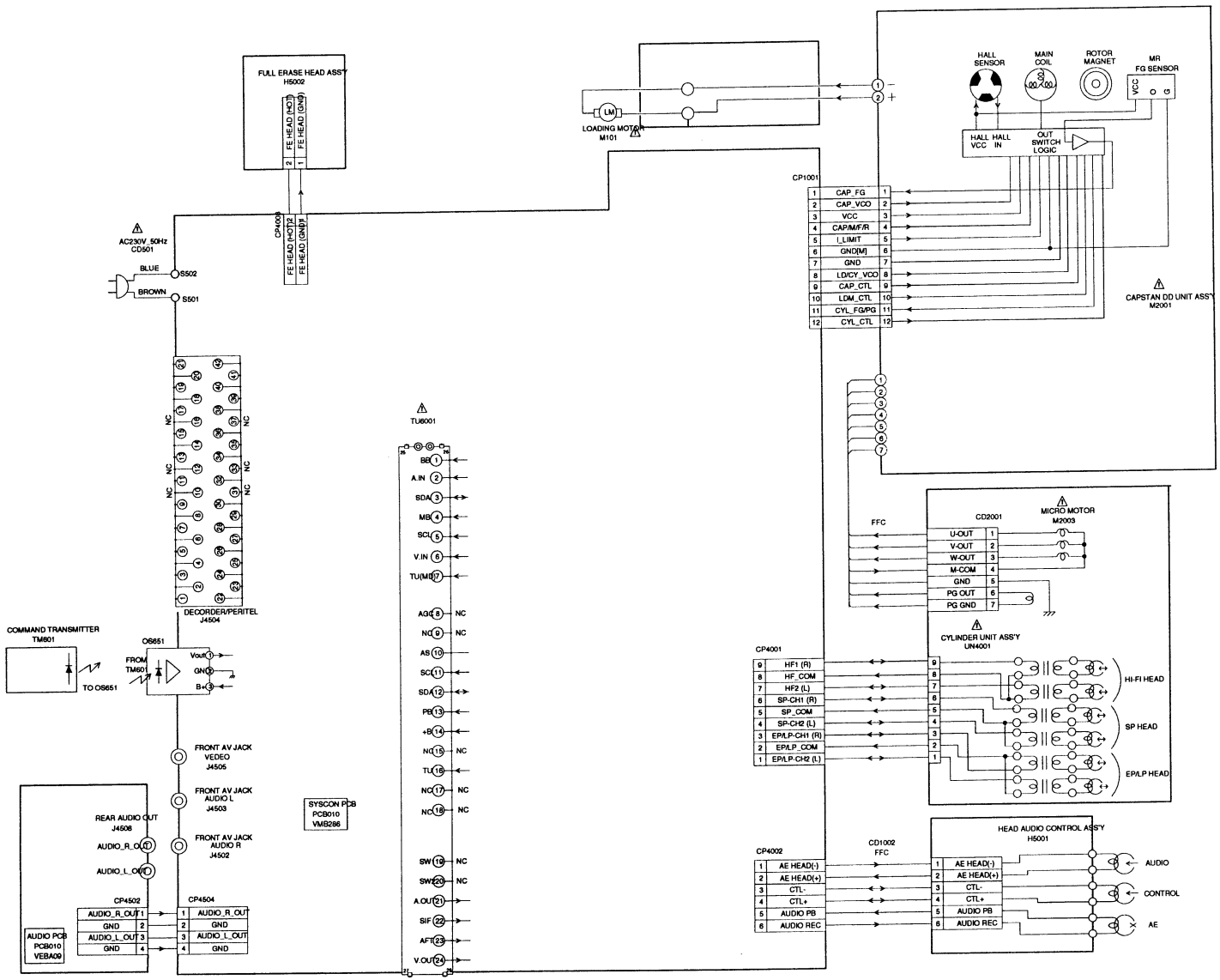
ATTENTION:
CES PIECES REPAREES PARTICULIEREMENT IMPORTANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES

CAUTION:
ONCE THESE PARTS MARKED ⚠ ARE
CRITICAL FOR SAFETY,USE ONES
DESCRIBED IN PARTS LIST ONLY

NOTE:THE DC VOLTAGE EACH PART WAS
MEASURED WITH THE DIGITAL TESTER
DURING PLAYBACK.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

INTERCONNECTION DIAGRAM



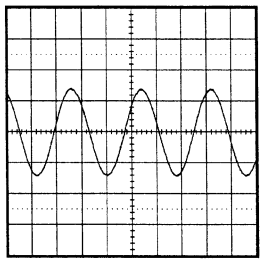
CAUTION! USE ONLY PARTS MARKED ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY

ATTENTION! LES PIECES REPAREES PAR ⚠ SONT IMPORTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

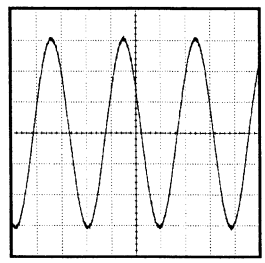
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

WAVEFORMS

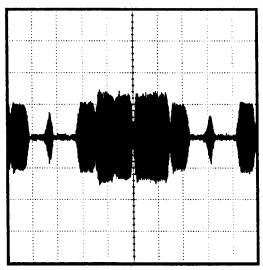
Y/C/AUDIO/HEAD AMP



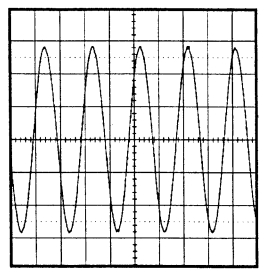
① REC
20V 5µs/div



⑥ REC 10V 5µs/div

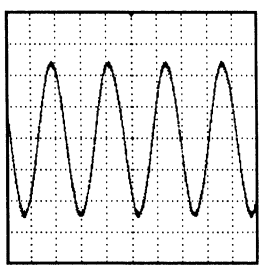


② PB
200mV 10µs/div

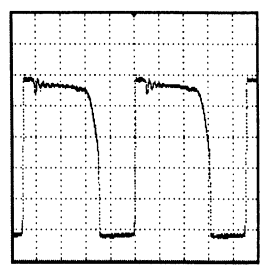


⑦ REC, PB
200mV 0.5ms/div

POWER

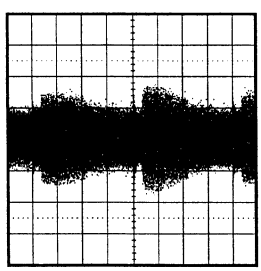


③ REC
100mV 100ms/div

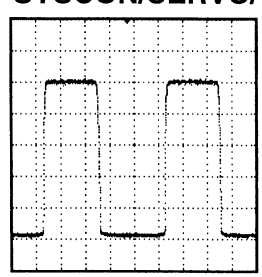


⑫ PB
50V 2µs/div

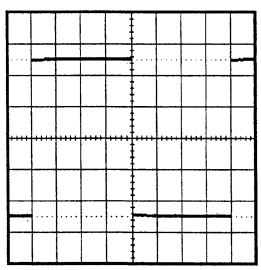
SYSCON/SERVO/TIMER



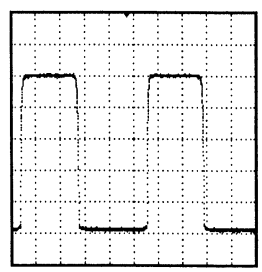
④ PB
100mV 5ms/div



⑰ PB
1V 200ms/div



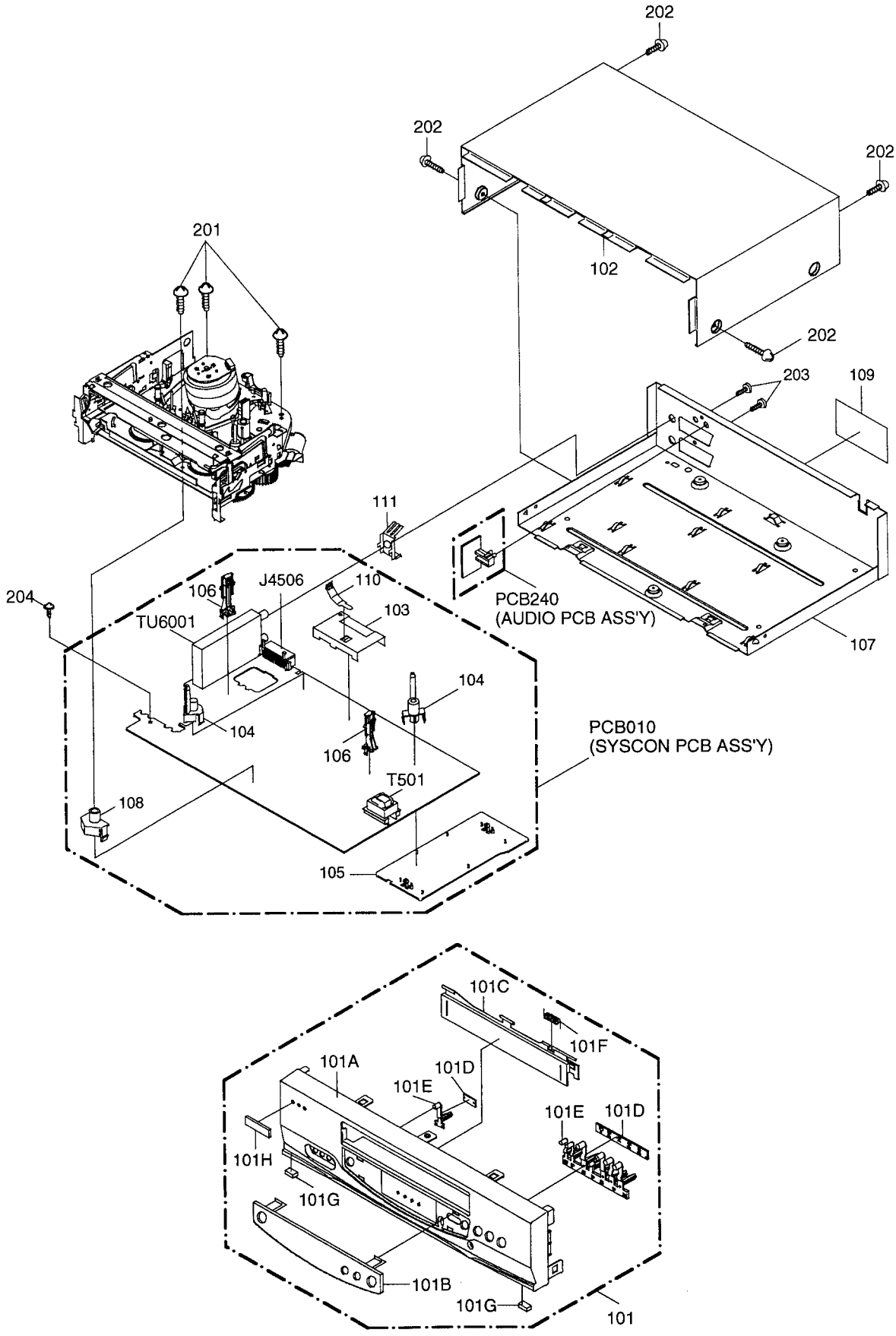
⑤ REC, PB
1V 5ms/div



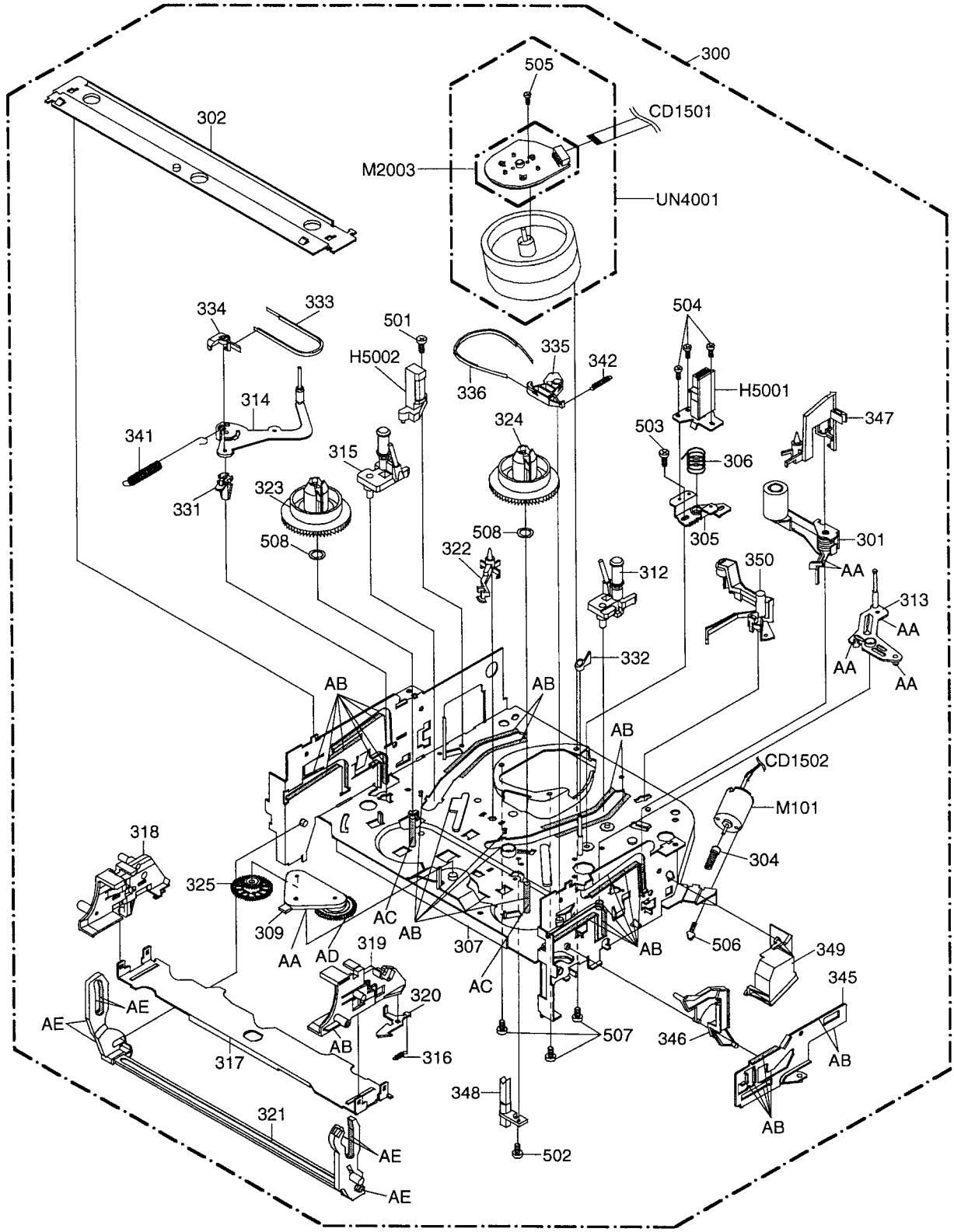
⑱ PB
1V 200ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



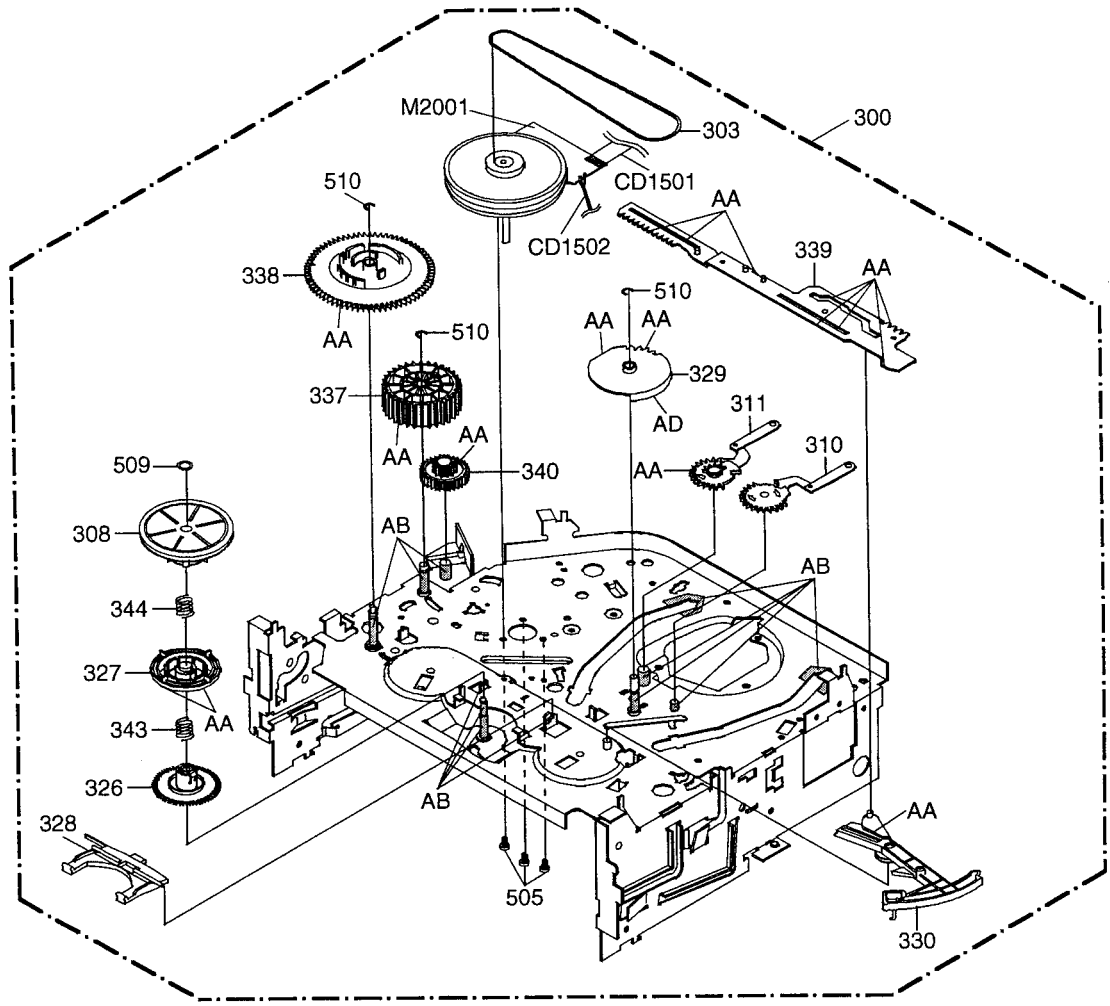
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB
	FG-84M	AC
	FL-721	AD
	G-313Y	AE

NOTE: Applying positions AA, AB, AC, AD and AE for the grease are displayed for this section. Check if the correct grease is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB
	FG-84M	AC
	FL-721	AD

NOTE: Applying positions AA, AB, AC and AD for th e grease are displayed for this section. Check if the correct grease is applied for ea ch position.

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
101	A4G231D720K	CABINET,FRONT ASSY		
101A	701WPJB483	CABINET,FRONT		
101B	711WPDA410	PLATE,DISPLAY		
101C	712WPJB374	FLAP		
101D	735WPAA362	BUTTON,HOLDER		
101E	735WPBA297	BUTTON,FRAME		
101F	743WKA0039	SPRING,FLAP		
101G	800WFA0045	CUSHION,LEG		
101H	711WPC0005	BADGE,BRAND		
102	702WSB0072	CABINET,TOP(VA)		
103	752WSA0230	SHIELD,CASE HEAD AMP		
104	701WPA0717	HOLDER,DECK		
105	755WPA0024	PLATE,COVER POWER		
106	85OP700038	HOLDER,END SENSOR		
107	702WSAA062	PLATE,BOTTOM		
108	701WPA0686	HOLDER,DECK		
109	722202A691	SHEET,RATING		
110	753WUAA006	SPRING,EARTH HEAD AMP		
111	753WUA0057	SPRING,EARTH TUNER		
201	8109130B94	SCREW,TAP TITE(B)R	PAN	3x29
202	8109230801	SCREW,TAP TITE(B)		3x8
203	8110230804	SCREW,TAP TITE(P)	BIND	3x8
204	8109230704	SCREW,TAP TITE(B)R	BIND	3x7
---	791UHA0014	GIFT,SHEET		
---	792UCA0004	PULP,PACKAGE		
---	793UCDB118	GIFT BOX		
---	JB5X0300	POLYBAG,INSTRUCTION		
---	J4E00129	INFORMATION SHEET		
---	J4G23101A	INSTRUCTION BOOK		
---	J4G23107A	QUICK SET-UP SHEET		
---	A4G231B975	INSTRUCTION BOOK KIT		

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
300	A4G210B420A	DECK ASS'Y	A4G210B420A
301	85OA400234	PINCH ROLLER BLOCK	
302	85OP900746	BRACKET,TOP 3V	
303	85OP200290	BELT,CAPSTAN (S)	
304	85OP600581	WORM	
305	85OP500083	BASE,AC HEAD	
306	85OP800324	SPRING,AC HEAD	
307	85OA000459	MAIN CHASSIS ASS'Y	
308	85OA200089	CLUTCH ASS'Y	
309	85OA200090	ARM IDLER ASS'Y	
310	85OA300065	LOADING ARM S UNIT	
311	85OA300066	LOADING ARM T UNIT	
312	85OA400223	INCLINED BASE T UINT 3S	
313	85OA400232	P5 ARM ASS'Y 2	
314	85OA400235	TENSION ARM ASS'Y 2	
315	85OA400231	INCLINED BASE S UNIT	
316	85OP800358	SPRING,LOCKER	
317	85OP900736	CASS,HOLDER	
318	85OP900748	CASS,SIDE L	
319	85OP900749	CASS,SIDE R	
320	85OP900739	LOCKER,R	
321	85OA900228	LINK UNIT	
322	85OP000496	POST,CASS GUIDE	
323	85OP200316	REEL,S (S)	
324	85OP200317	REEL,T (S)	
325	85OP200308	GEAR,IDLER	
326	85OP200311	GEAR,CLUTCH	
327	85OP200312	GEAR,COUPLING	
328	85OP200313	LEVER,CLUTCH	
329	85OP300194	GEAR,MAIN LOADING	
330	85OP400490	LEVER,TENSION	
331	85OP400492	HOLDER,TENSION	
332	85OP400520	CAP.P4	
333	85OP400542	BAND,TENSION	
334	85OP400533	CONNECT,TENSION	
335	85OP600573	ARM,BRAKE T	
336	85OP600584	BAND,BRAKE T	
337	85OP600577	CAM,PINCH ROLLER	
338	85OP600578	CAM,MAIN	
339	85OP600579	ROD,MAIN	
340	85OP600582	GEAR,JOINT	
341	85OP800322	SPRING,TENSION	
342	85OP800360	SPRING,BRAKE T	
343	85OP800355	SPRING,COUPLING	
344	85OP800356	SPRING,RING	
345	85OP900750	LEVER,LINK 2	
346	85OP900744	LEVER,FLAP	
347	85OP900745	CASS,OPENER	
348	85OP700035	REFLECTOR,LED	
349	85OP700039	COVER,BOT	
350	85OA500026	AHC ASS'Y	

REF. NO.	PART NO.	DESCRIPTION	
501	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
502	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
503	8107226404	SCREW,TAP TITE(S) BIND	2.6x4
504	8102120604	SCREW,PAN	M2x6
505	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
506	810A130404	SCREW/WASHER(A)	M3x4
507	810A126504	SCREW/WASHER(A)	M2.6x5
508	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13
509	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
510	83ETW30000	E-RING	3
CD1501	122H071603	CORD JUMPER	SMCD-7X151
CD1502	122Y021902	CORD JUMPER	2Y021902
H5001	1523Q91003	HEAD (AUDIO CONTROL)	VTR-1X2RPE22-756
H5002	1543Q02014	HEAD (FULL ERASE)	VTR-1X2ERS11-154
⚠ M101	1596S98001	MOTOR (LOADING)	MDB2B66
⚠ M2001	1510S98036	CAPSTAN DD UNIT	F2QVB08
M2003	1589S11017	MICRO MOTOR	I2OAL05
M2003	1589S11015	MICRO MOTOR	I2OAL01
⚠ UN4001	A2A787D500	CYLINDER UNIT ASS'Y	A2A787D500

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS	
R502	R3X181221J	R,METAL OXIDE	220 OHM 1W
R505	R3X28A104J	R,METAL OXIDE	100K OHM 2W
⚠ R506	R3X1812R2J	R,METAL OXIDE	2.2 OHM 1W
R511	R65584471J	R,FUSE	470 OHM 1/4W
		CAPACITORS	
⚠ C502	P2122B104M	CMP	0.1 UF 275V ECQUL
⚠ C505	CD39E0MH3M	CC	0.0022UF 250V
⚠ C506	E02LFH220M	CE	22 UF 400V
⚠ C507	CS0YB04G4K	CC	0.018 UF 50V B
⚠ C522	E02LT0102M	CE	1000 UF 6.3V
		DIODES	
D501	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D502	D2WXN40050	DIODE SILICON	1N4005-EIC
⚠ D503	D2WXN40050	DIODE SILICON	1N4005-EIC
⚠ D504	D2WXN40050	DIODE SILICON	1N4005-EIC
⚠ D505	D2WXN40050	DIODE SILICON	1N4005-EIC
D506	D1VT001330	DIODE,SILICON	1SS133T-77
D507	D2LTP10KE0	DIODE,RECTIFIER	RGP10KE-G3
D508	D17T002440	DIODE SILICON	1SS244T-77
D509	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D510	D1VT001330	DIODE,SILICON	1SS133T-77
D511	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠ D512	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
D513	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
D514	D97U03301B	DIODE,ZENER	MTZJ33B T-77
⚠ D515	D97U01601B	DIODE ZENER	MTZJ16B T-77
⚠ D516	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D517	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D518	D1VT001330	DIODE,SILICON	1SS133T-77
D519	D97U09R11B	DIODE,ZENER	MTZJ9.1B T-77
D520	D1VT001330	DIODE,SILICON	1SS133T-77
D521	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
D522	D2WXN40050	DIODE SILICON	1N4005-EIC
D523	D1VT001330	DIODE,SILICON	1SS133T-77
D655	D2WXN40050	DIODE SILICON	1N4005-EIC
D1001	0010E00330	INFRARED LED	LTE-3271T-012A-O
D4001	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS	
⚠ IC501	I1KJ9A431A	IC	KIA431A-AT
⚠ IC502	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC1001	I56F57085A	IC	OEC7085A
IC1003	I9UF032310	IC	PST3231NR
IC1099	A4G231D015	IC	S-24C08AFJA-TB-01
IC4001	I04F38225F	IC	HA118225F
IC4501	I0UF014430	IC	MM1443XJ
IC5501	I03F7646SM	IC	LA72646SM-MPB
IC6601	I0KFA9873H	IC	TDA9873H
		TRANSISTORS	
⚠ Q501	TC5T021204	TRANSISTOR,SILICON	2SC2120Y(TPE2)
⚠ Q502	TC3U037510	TRANSISTOR SILICON	2SC3751
Q504	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
⚠ Q505	TAAT01273Y	TRANSISTOR SILICON	KTA1273_Y
Q506	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q507	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q651	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q652	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q653	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q654	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q655	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q656	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q657	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q658	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q659	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q662	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q664	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q665	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q667	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q668	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q1001	0000M00390	PHOTO TRANSISTOR	ST-304L
Q1002	0000M00390	PHOTO TRANSISTOR	ST-304L
Q1004	0002700680	PHOTO COUPLER	RPI-352C40N
Q1007	0002700680	PHOTO COUPLER	RPI-352C40N
Q1009	0002700690	PHOTO COUPLER	RPI-303
Q1010	0002700690	PHOTO COUPLER	RPI-303
Q1011	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q4002	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q4003	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT

REF. NO.	PART NO.	DESCRIPTION	
		TRANSISTORS	
Q4005	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q4006	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q4007	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q4502	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
		COILS &TRANSFORMERS	
⚠ L501	029T000083	COIL,LINE FILTER	0R3A433F20
L502	021W7A220K	COIL	22 UH
L503	021W7A220K	COIL	22 UH
L1002	0216A62R2K	COIL	2.2 UH
L4002	02167F101J	COIL	100 UH
L4003	031616003R	COIL,BIAS OSC	1616003
L4005	02167F101J	COIL	100 UH
L4006	02167F101J	COIL	100 UH
L4007	0216A6820K	COIL	82 UH
L4008	02167F101J	COIL	100 UH
L4009	02167F101J	COIL	100 UH
L4010	0216A6120K	COIL	12 UH
L4011	0216A6390K	COIL	39 UH
L4012	02167F101J	COIL	100 UH
L4015	0216A6R22K	COIL	0.22 UH
L4016	0216A6R22K	COIL	0.22 UH
L4017	0216A6R22K	COIL	0.22 UH
L4501	02167F101J	COIL	100 UH
L4502	02167F101J	COIL	100 UH
L4504	0216A6100J	COIL	10 UH
L4505	0216A6100J	COIL	10 UH
L4506	0216A6100J	COIL	10 UH
L4507	0216A61R0J	COIL	1 UH
L5501	02167F220J	COIL	22 UH
L5502	02167F220J	COIL	22 UH
L5503	02167F220J	COIL	22 UH
L6001	02167F220J	COIL	22 UH
L6601	02167F220J	COIL	22 UH
⚠ T501	0481220174	TRANSFORMER,SWITCHING	8122017
		JACKS	
J4502	060J421023	RCA JACK	MSP-281V3-A
J4503	060J401080	RCA JACK	MSP-281V1-B
J4504	063G000072	SOCKET,21PIN	035_0_8183_00
J4505	060J401079	RCA JACK	MSP-281V4-B
J4508	060J411023	RCA JACK	MSP-382V-08 PBSN
		SWITCHES	
SW651	0504101T34	SWITCH,TACT	EVQ21505R
SW652	0504101T34	SWITCH,TACT	EVQ21505R
SW654	0504101T34	SWITCH,TACT	EVQ21505R
SW655	0504101T34	SWITCH,TACT	EVQ21505R
SW656	0504101T34	SWITCH,TACT	EVQ21505R
SW657	0504101T34	SWITCH,TACT	EVQ21505R
SW658	0504101T34	SWITCH,TACT	EVQ21505R
SW659	0504101T34	SWITCH,TACT	EVQ21505R
SW1001	0508S11001	SWITCH (LEAF)	LSA-1144EAU
		P.C.BOARD ASSEMBLIES	
PCB010	A4G239D010K	PCB ASS'Y	VMB286A
PCB240	A4G216D240K	PCB ASS'Y	VEBA09A
		MISCELLANEOUS	
B501	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B503	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
BT601	1412004013	BATTERY,MANGAN	R03(AB)2PXGPI
⚠ CD501	1206458802	CORD AC BUSH	6458802
CD1002	122F061502	CORD JUMPER	2F061502
CD4501	WBL6012038	FLAT CABEL	AWG26 4C BLACK 120MM
CD6002	06CDL02002	RF CABLE PAL FTZ	CDL02002
CP1001	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2
CP4001	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP4002	069J760019	CONNECTOR PCB SIDE	IMSA-9604S-06Z13
CP4003	067U002019	WIRE HOLDER	B2013H02-2P
CP4501	067U004029	WIRE HOLDER	B2013H02-4P
CP4502	067U004029	WIRE HOLDER	B2013H02-4P
EL002	124120301A	EYE LET	XRY20X30BD
⚠ F501	080NT1R604	FUSE	50T016H
FH501	06710T0006	HOLDER,FUSE	EYF-52BC
FH502	06710T0006	HOLDER,FUSE	EYF-52BC
OS651	077Q037001	REMOTE RECEIVER	PIC-37043LO
TM601	076N0ED180	TRANSMITTER	RC-ED180
⚠ TU6001	0162K01031	RF UNIT	TCMB0601PD13D(H)
V651	0040F94008	LED DISPLAY	ELF-4B6GWB/S405
X1001	100DA32R01	CRYSTAL	DT-26
X1002	100CT01207	CRYSTAL	HC-49/U-S

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		MISCELLANEOUS	
X4001	100DT4R410	CRYSTAL	AT-49
X6602	100CT4R009	CRYSTAL	HC-49/U

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

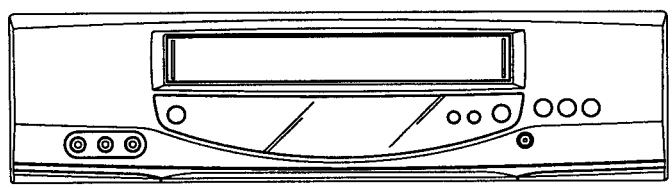
SPEC.NO.	M4G2-31D
O/R NO.	U334539

ORION

VH-2911 HiFi

SERVICE MANUAL

VIDEO CASSETTE RECORDER



VHS
PAL

SUPPLEMENT
CHASSIS CODE A

This SUPPLEMENT must be used together SERVICE MANUAL for VH-2911 HiFi SI.
All other test and repair procedures are as shown in the ORIGINAL MANUAL.
Please file this SUPPLEMENT with the ORIGINAL VERSIONS.

Design and specifications are subject to change without notice.

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	VH-2911 HiFi SI		VH-2911 HiFi	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
TM601	076N0ED180	TRANSMITTER RC-ED180	076N0ED040	TRANSMITTER RC-ED040

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	VH-2911 HiFi SI		VH-2911 HiFi	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
101	A4G231D720K	CABINET,FRONT ASS'Y	A4G205D720K	CABINET,FRONT ASS'Y
101A	701WPJB483	CABINET,FRONT	701WPJB469	CABINET,FRONT
101C	712WPJB374	FLAP	712WPJB373	FLAP
101E	735WPBA297	BUTTON,FRAME	735WPBA327	BUTTON,FRAME
102	702WSB0072	CABINET,TOP(VA)	702WSB0071	CABINET,TOP(VA)
109	722202A691	SHEET,RATING	722202A698	SHEET,RATING
---	793UCDB118	GIFT BOX	793UCDB137	GIFT BOX

SPEC.NO.	M4G2-05D
O/R NO.	U384511